SOUTHERN POWER AND INDUSTRY

NOVEMBER, 1956

SPI . . . 53rd Year

REACHES industrial plants (manufacturing, process, utility and large service) in the South & Southwest.

SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

FIFTY CENTS PER COPY

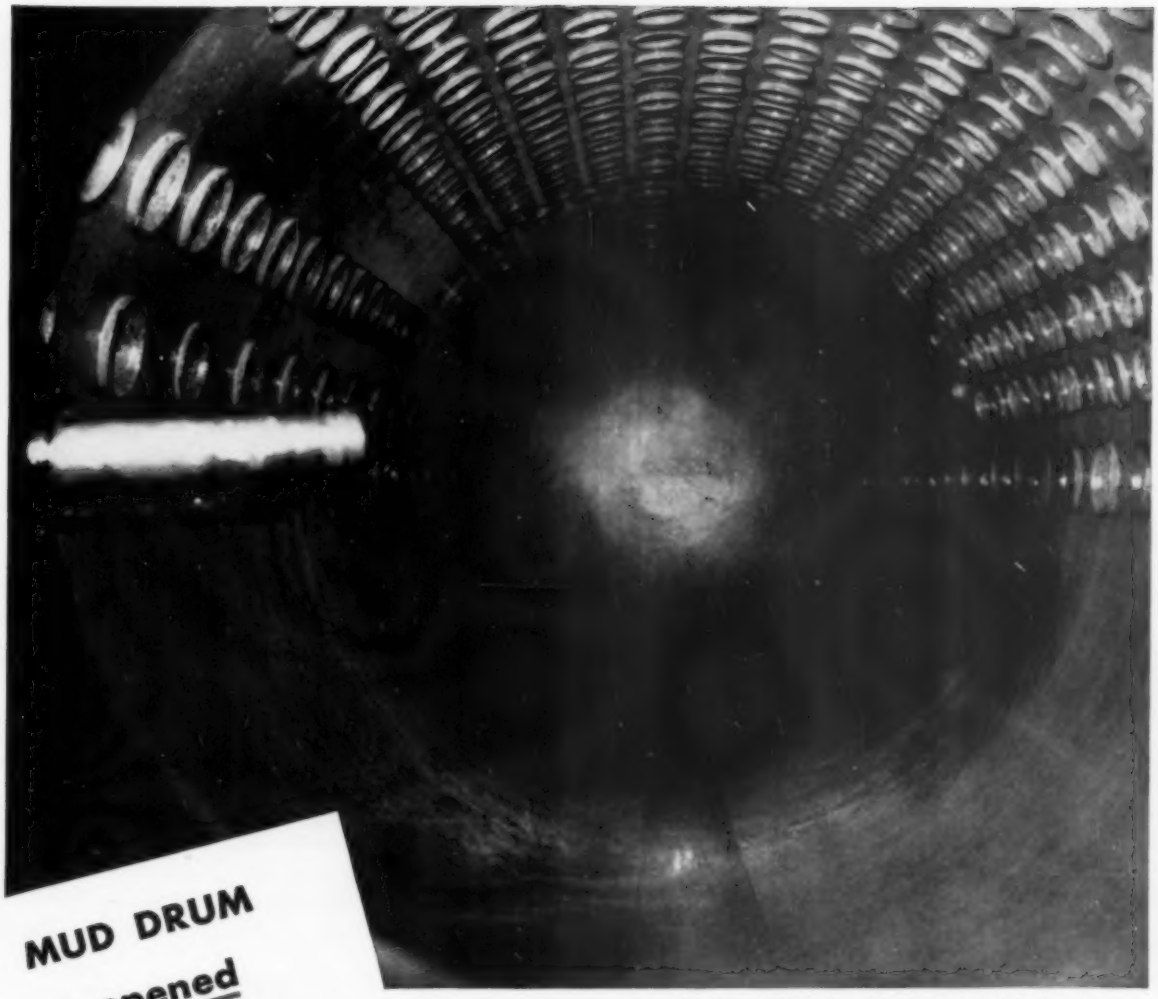
Chattanooga Boiler Plant Builds Huge Vessel for Nuclear Power

SHELL OF 235-TON REACTOR vessel made at Chattanooga, Tennessee for America's first full-scale commercial nuclear power plant. Internal diameter is 9 feet and height is 31 feet. The bottom head and shell were constructed from manganese-molybdenum (stainless clad) steel plate 6-in. and 8 3/8-in. thick respectively. See page 40 for details.

How You Can SAVE MONEY With Materials Handling Equipment . . . Page 51

SOUTHERN POWER & INDUSTRY is published monthly by W. R. C. Smith Publishing Co., Executive and Editorial Offices: 806 Peachtree St., N.E., Atlanta 8, Ga. Entered as second-class matter at the Post Office, Charlotte, N. C. Subscription Rates: United States and Possessions, $1.50 per year or three years for $3.00; Foreign Countries, $10.00 per year.

Volume 74 Number 11



MUD DRUM
as opened
after one year
on line
with
THE *nalco* SYSTEM

Unretouched photo of Nalco treated boiler at Georgia Institute of Technology, Atlanta, Georgia

● Calling this a mud drum serves only to identify its location . . . it is perfectly clean after a full year on line. The unretouched photo was taken immediately after the drum was opened. No wash-out was necessary. Not only is the drum free of scale and corrosion . . . Nalco sludge conditioning operated so effectively that even under the static, off-line draining condition, no sludge deposited in tubes or drums.

The Nalco System can get results like these, economically, in *your* plant—regardless of boiler size or pressure. Write or phone Nalco today for action on a complete water treatment program.

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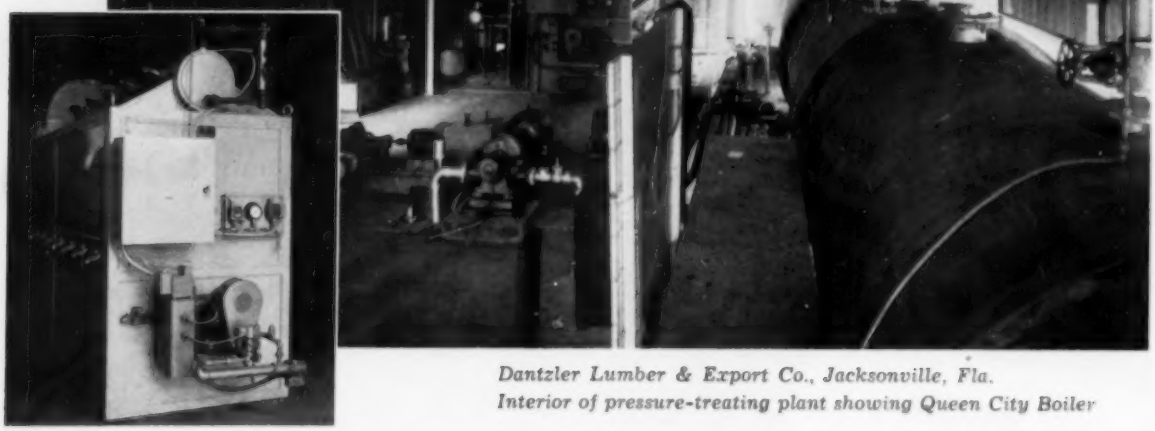
THE *nalco*®
SYSTEM . . . Serving Industry through Practical Applied Science

"Built-in" RESERVE STEAM of QC Boiler works 'round the clock for Dantzler Lumber Co.!



Dantzler Lumber & Export Co., Jacksonville, Fla.
Interior of pressure-treating plant showing Queen City Boiler

100 hp QC Boiler delivers needed temperature rise in required time for maximum production

That, in a nutshell, is the story of the high efficiency of the Queen City water tube boiler working for the Dantzler Lumber & Export Co. in Jacksonville, Fla.

Dantzler operates one of the most modern and well-equipped wood preserving plants in the country. Dantzler says the 100 hp Queen City water tube boiler is a "near relative to the electronic brain" due to the automatic controls which precisely adjust the supply of fuel and water as required . . . and which delivers full steam pressure fast, as needed, 'round the clock!

Install a Q C "bent tube" water tube boiler in your plant. No matter what the fuel . . . oil, gas, coal, combination gas-oil . . . Queen City boilers give you more steam, faster and drier, for less cost! Available from 300 to 17,500 lbs/steam/hr, up to 250 psi.

Highly efficient
QUEEN CITY WATER TUBE BOILERS
are saving money **right now** for many plants in many industries!

For complete information, write

QC BENT TUBE

Queen City Engineering Co.

P. O. Box 3103 CHARLOTTE • NORTH CAROLINA

SOUTHERN POWER AND INDUSTRY

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DESIGN, OPERATION AND MAINTENANCE

MATERIALS HANDLING CASE HISTORIES

SHORT SOLUTIONS AND SUGGESTIONS

REGULAR FEATURES—DEPARTMENTS

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Editorial and Executive Offices: SOUTHERN POWER & INDUSTRY, 806 PEACHTREE ST., N. E. ATLANTA 8, GEORGIA

Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

November 1, 1956

◆ HOW TO OBTAIN maximum benefits from high-quality electric service is exemplified by the Shell Oil Company's Norco Refinery operation in Louisiana. The modern plant combines reliability with low capital outlay.

In SPI's December issue, J. D. Ramsey, Manager of Utilities for the Norco Refinery, will present some features and problems which are frequently encountered in the design of high quality electric service for processing plants. Shell engineers have tried not to be completely dominated by what has been done before. As long as basic and proven design principles with reference to safety and reliability are not violated, they have not hesitated to proceed with new ideas.

The discussion, to be featured in your December issue, will cover power sources, system development, substations and switchgear, distribution, and details of actual operating experience over the past 2 1/2 years.

◆ MECHANICAL SEALS, properly installed, eliminate stuffingbox repacking and maintenance and solve problems of leakage on most pumping services. One of the keys to proper installation is a smooth stuffingbox end machined at right angles to the shaft axis. To properly do the job, Byron Jackson Pumps, Inc., has developed a new precision hand tool—The BJ Stuffingbox Refacing Tool—with which the user can reface and install a mechanical seal quickly, easily and inexpensively. Three sizes accommodate shafts from 3/4 to 3-in.

◆ 750 HP PACKAGED BOILER, recently announced by Cyclotherm delivers 26,000 lb/hr at over 80% efficiency. Designed for heavy oil or gas, the boiler can be adapted to burn either LP-Gas or light oil, as well. New generator combines all of the advantages of package steam generators with the steaming capacities formerly associated exclusively with HRT boilers assembled at the plant site.

◆ A SYNTHETIC LUBRICANT for air compressors which minimizes explosions and receiver fires as well as carbon deposits on exhaust valves and air system piping has been announced by Monsanto Chemical Company's Organic Chemicals Div. The fire-resistant fluid—Pydraul AC—is also reported to reduce carbon deposition, thus offering maintenance savings in addition to a wide safety margin in compressed air systems.

The synthetic lubricant has been tested and proved in hundreds of compressors by more than 30 major companies. Conversion of compressors from petroleum lubricants is simple: Splash-lubricated compressors need only be cleaned of their petroleum deposits before installing the new fluid; Separate force-feed cylinder lubricators can be converted with modification kits available from major lubricator manufacturers.

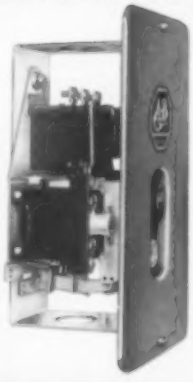
◆ PLASTIC CONVEYOR BELTS are attacking one of the biggest production line headaches in the food industry. Fabricated by joining two sheets of du Pont's "Mylar" polyester film with a special white

The Quality Line
of Manual Motor Starters

GENERAL-PURPOSE

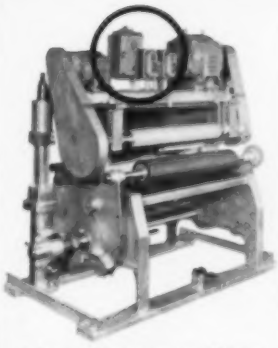
WATERTIGHT

EXPLOSION-PROOF

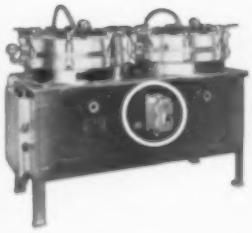


FLUSH TYPE

A-B manual starter, in NEMA 1 general-purpose enclosure, on DeWalt metal cutter.



A-B manual starters, in NEMA 4 watertight enclosures, on Stehling fleshing machine.



A-B manual starter, in NEMA 7 explosion-proof enclosure, on Hilco oil reclaimer.

A-B manual starter, in Type 181 flush mounting, on Noble & Westbrook shell marker.

The popularity of Bulletin 609 manual starters rests on the following facts!

1—They are so simple. Few moving parts mean few chances for trouble.
2—Quick-make and quick-break switching action prevents contact "teasing."
3—Double break, silver alloy contacts need no cleaning or filing—they are always in perfect operating condition.
4—Use of "buttons" for ON and OFF switching is convenient for operator.
5—The two solder-pot overload breakers provide continuously dependable and accurate motor overload protection.

Be sure to send for a bulletin describing the full line of A-B Bulletin 609 manual across-the-line starters up to 5 hp, 220 v; 7½ hp, 440-550 v.

Allen-Bradley Co., 1328 S. Second St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

Bulletin 646 autotransformer starter.

ALLEN-BRADLEY SOLENOID MOTOR CONTROL

CONSULT YOUR LOCAL ALLEN-BRADLEY REPRESENTATIVE

ALBUQUERQUE—A & A Supply Co., 114 Morningside Dr., N. E., Tel: 6-0307
ATLANTA—W. R. Calverley, 1000 Peachtree St., N. E., P. O. Box 7086, Sta. C., Tel: TRinity 6-8833
BALTIMORE—H. M. Wood & Co., Inc., 124 Light St., Tel: MUlberry 5-4643-4
BIRMINGHAM—J. L. Haworth Co., Inc., 825 S. 22nd St., So., Tel: 53-1171
CHARLESTON—Henry E. Payne, 310 Union Bldg., Tel: 3-1393
CHARLOTTE—Le Roy P. Spoon, 307 Lincoln St., Tel: EDison 4-6334
DALLAS—J. K. Webb, 2810 McKinney Ave., Tel: Tenison 6179
HOUSTON—Wilson Electrical Equip. Co., 2930 Commerce Ave., Tel: CApitol 8-1557
JACKSONVILLE—Robert P. Smith & Co., 1446 June St., Tel: EXbrook 8-0531
KANSAS CITY—B. L. McCreary & Son, 1819 Central St., Tel: HArrison 1-1668
KNOXVILLE—Bowditch & Co., 1311-C N. Broadway, P. O. Box 3145, Tel: 4-2513
LITTLE ROCK—Curtis H. Stout, Inc., P. O. Box 107, 400 Shall St., FRanklin 4-8201
LOUISVILLE—Rietze & Co., 2209 S. Floyd St., Tel: MElrose 7-3603
MEMPHIS—Curtis H. Stout of Tennessee, Inc., 718 M & M Bldg., Tel: JAckson 6-7601
MIAMI—Lee-Smith Co., 121 S. E. First St., Tel: FRanklin 1-6766
NEW ORLEANS—Robbins & Robbins, 1037 Magazine St., Tel: Canal 5805
PHOENIX—E. P. Weller & Co., 1902 East Roosevelt Ave., Tel: AMhurst 6-3188
RICHMOND—H. M. Wood & Co., Inc., 2016 Second Ave., Tel: 3-8529
ST. LOUIS—Harold Julien, 904 N. Grand Blvd., Tel: JEfferson 5-1901
SAN ANTONIO—Wilson Elect. Equip. Co., 101 E. Maple St., CApitol 4-2344
SAN DIEGO—James A. Setchell Co., Inc., 301 W. "G" St., Tel: BElmont 3-3981
TULSA—John W. Elder Co., 1526 East Fourth St., Tel: Diamond 3-9149

Facts and trends *(continued from page 4)*

adhesive, the material is strong, smooth, flexible, crackproof, non-absorbent, immune to attack by oils and greases, stable under temperature and humidity changes and is a good heat transfer agent.

Food processors, pharmaceutical houses, tobacco operations, rubber products manufacturers, and chemical plants use the plastic belting to advantage where strength and good release properties are desired. Cost is about $1.50 per foot for 30" width belting. (See New Equipment Section of this issue for details.)

◆ ELECTRIC POWER SWEEPER recently introduced by Wayne Manufacturing can work an eight-hour shift before it needs recharging. It operates on two motors, one powering the vehicle and the second the brooms and dust control system. When traveling but not sweeping, only the motor is used, thus saving the batteries. To re-charge, simply plug into any 110-volt outlet.

◆ CONTROL PROBLEMS? Bailey Meter Company is publicizing their Building Block Method of instrumentation and control which enables you to simplify control problems by combining standardized measuring, transmitting and controlling components as required. They can be added as needed, removed and reused elsewhere or recombined into another system when the need changes.

System components — transmitters, receivers, relays, selector stations, power units — are standardized for multi-purpose use. Large inventories are no longer needed and maintenance is considerably simplified.

◆ PLASTIC EXPANSION JOINTS — Slip type pipe expansion joints of unplasticized polyvinyl chloride, being produced by Tube Turns Plastics in 1", 2" and 3" sizes, are designed for use with rigidly fixed PVC piping subjected to thermal cycles. Joint has been tested at pressures up to 325 psi, and temperatures up to 140 F.

◆ "BUILD WITH ALUMINUM to minimize plant maintenance" emphasizes one of the leading aluminum fabricators. Since it resists rust and corrosion due to chemicals, gases, plant atmospheres, and coastal environments, you save on the expense of painting and on replacement of parts destroyed by corrosion. Aluminum structurals, jacketing, tread plate, heat exchanger tubing, accessories, and process pipe offer decided advantages.

◆ OUTDOOR GENERATING PLANTS are favored by Houston Lighting & Power Company. Experience points toward the continued construction of full outdoor stations with the advantages of less construction cost, less construction time, operating and maintenance costs favorable as compared to indoor construction, fewer operators needed and greater safety for personnel.

◆ PRIVATE POWER NOTE—It has been only two years since the bars were lowered for the construction of nuclear power plants by private utilities. In this period of time, 44 private companies have planned the building of 7 large and 2 medium size power plants having a capacity in excess of 1,100,000 kw and involving more than $300,000,000 of private capital. Furthermore, more than 50 additional companies are actively engaged in planning or study programs.

Your boiler is very likely big enough to take advantage of famous Ljungstrom efficiency. Even boilers as small as 25,000 pounds of steam per hour have grown up to a Ljungstrom. Completely shop-assembled, this new unit arrives in one package, ready for installation. And you can expect these immediate results:

FUEL SAVINGS: Generally, ten percent or more. This alone means write-off is possible in approximately three years.

INCREASED BOILER OUTPUT: Preheated air makes higher combustion temperatures, which means higher steam producing capacity.

LESS MAINTENANCE: Better combustion reduces slag, makes for longer periods between overhaul. Cleaner stack gases. Less smoke nuisance.

EFFICIENT USE OF EVEN LOWER GRADE FUELS: Higher furnace temperatures allow effective burning of low grades.

Find out how the efficient, low-cost Package Ljungstrom Air Preheater can be applied to your steam-generating units. Write today to the Air Preheater Corporation. Free brochure on request.

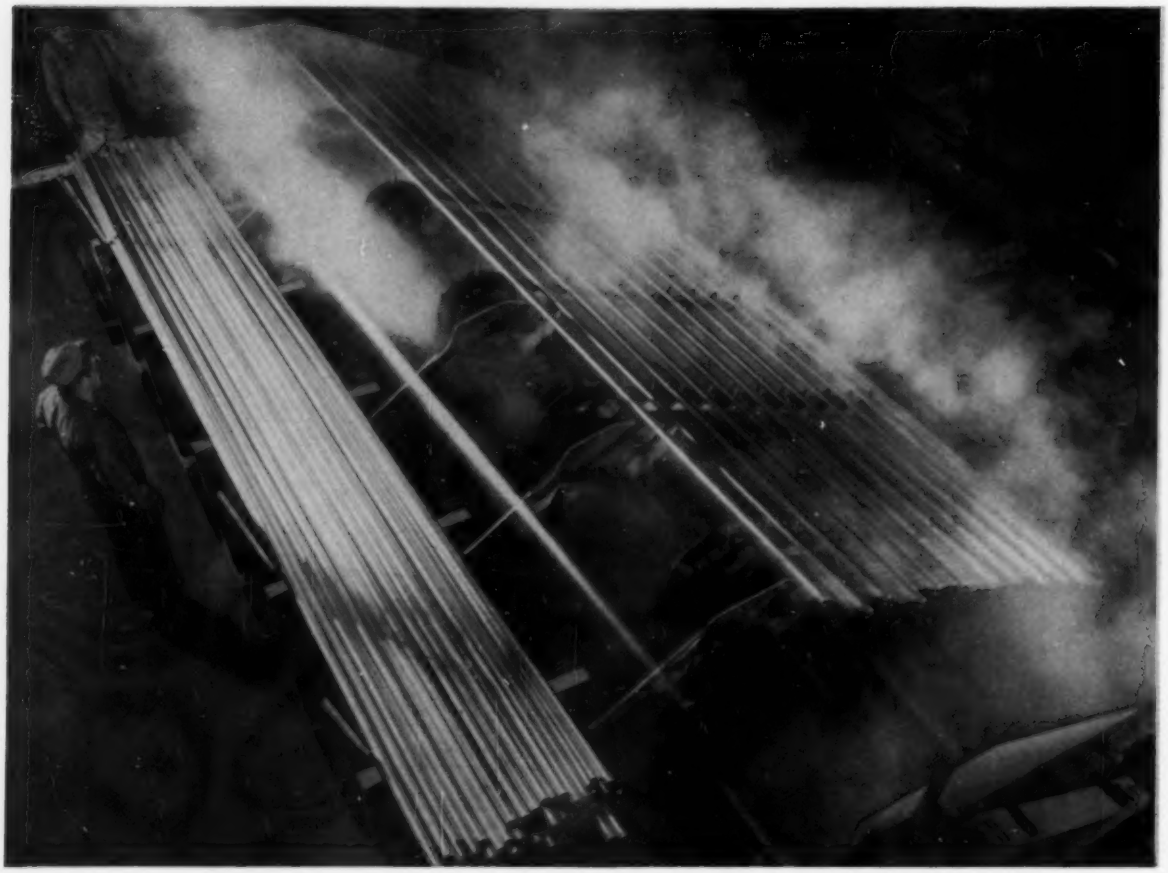
This "package preheater" is for boilers in the 25,000 to 200,000 pound per hour range

The Package Ljungstrom operates on the continuous regenerative counter-flow principle. The heat-transfer surfaces on the rotor act as heat accumulators. As the rotor revolves, the heat is transferred from the waste gases to the incoming air.

The Air Preheater Corporation 60 East 42nd Street, New York 17, N. Y.

NOW!

SPANG CW GALVANIZED FINISH IS BETTER THAN EVER!



New quenching facilities at Etna produce improved bonding, longer pipe life for your installations

SPANG takes the lead again in product improvement by the addition of new quenching facilities in the manufacture of galvanized CW Steel Pipe. These facilities handle ½" to 4" pipe after it has been galvanized, cooling it in a sodium dichromate solution from 800 F to 160 F under close control.

This careful quenching results in a better bond between the layer of zinc and the steel surface of the pipe, and increases the ductility of the zinc coating.

Here's what it does for you

First, the stronger bond gives you added assurance that the galvanized finish on SPANG CW Pipe will not crack, flake, chip or peel, even under the severest bending strains.

Second, the chemical reaction of the sodium dichromate on the finish retards the formation of white rust on the pipe, an important factor in adding extra service life, especially when ocean shipments are involved. In addition, the galvanized, lustrous finish stays brighter longer.

Add to this all the other *quality-control* features that go into the manufacture of SPANG CW, and you have a *top-quality* product for *top-quality* installations . . . a steel pipe that's clean, uniform, strong, easy to work with.

Take advantage of SPANG's *quality control*. Order SPANG CW Pipe from your nearby SPANG Distributor. He carries the complete line.

SPANG-CHALFANT

DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: Two Gateway Center, Pittsburgh, Pa. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis

NEWS for the South and Southwest

Fisher Governor—Southeast

Fisher Governor Company, Marshalltown, Iowa, has named **Jack M. Smither & Company**, sales representative for **Georgia, Florida** and eastern **Tennessee.**

Mr. Smither joined the Fisher sales organization in 1945. Since then he has been associated with the offices in Tulsa and Dallas. He has a degree in mechanical engineering from Texas A & M, and spent four years in the Air Force during World War II.

Howard Wheeler and **David P. Thomas** will be associated with Smither in this office, which will be located at 3158 Maple Street, N. E., Atlanta, Georgia.

$3 Million Square D Plant for Lexington, Kentucky

Square D Company will build a $3,000,000 electrical equipment plant on a 29 acre site in **Lexington, Ky.** One-third of the amount is for equipping the 150,000 sq ft facility with the modern, high-production machinery.

Square D's schedule calls for breaking ground in Lexington within 60 days and for completion of the project in one year. An initial requirement of several hundred employees is anticipated. Meanwhile, the company is launching pilot operations in the same city and has leased a 12,500 sq ft building for the assembly of special panelboards and switchboards for regional markets.

Combustion Engr.—Sls. Mgr.

Robert M. Hatfield, vice president of **Combustion Engineering Inc.**, has been appointed general sales manager of the Company. Mr. Hatfield, who formerly was vice president of the Western Division of the Company, with headquarters in Los Angeles, has had his 22-year service with Combustion Engineering interrupted twice for important assignments with the government in Washington. During World War II he was on loan to the War Production Board where he progressed to deputy vice chairman for production for all war industries. During the Korean War he organized and headed the Power Equipment Division of the National Production Authority and later became vice chairman of the Munitions Board.

New Sales Executive for Cameron & Barkley Co.

The appointment of **Edward J. Fitzgerald, Jr.**, as Sales Executive of the **Cameron & Barkley Co.** has been announced by Rufus C. Barkley, President. According to Mr. Barkley the establishment of the new Sales Executive position was necessary to coordinate extensive sales training and expansion plans brought about by the rapid industrial growth in the areas covered by Cambar's branches. These include Charleston, S. C., Savannah, Ga., Tampa, Orlando, Jacksonville and Miami, Florida.

Mr. Fitzgerald comes to Cameron & Barkley after five years with the Wix Corporation and their subsidiary, Carolina Metal Products, which he served as Assistant General Manager in charge of production and sales. His experience includes sales promotion, business management, engineering and production.

Attached directly to the executive staff, Mr. Fitzgerald will work with the individual branch managers and salesmen to build a pattern of superior customer service and to streamline operations. His initial assignment will be in the **Tampa area.**

Coles Cranes — Ga.

Coles Cranes, Inc., Joilet, Illinois, has appointed **W. S. Murphy Co.**, 598 Ponce de Leon Ave., N.E., Atlanta, Georgia, as distributor in the **Georgia area** for its complete line of mobile cranes. The Coles line include self-propelled, truck and rail mounted mobile cranes, gasoline-, diesel-, or L.P. gas-electric powered, in capacities ranging from four to twelve tons.

Ross Heat Exchanger Opens Southeastern Office

The opening of a new southeastern office at 522 N. McDonough St., **Decatur, Georgia**, for the sales-engineering of Ross heat exchange equipment, has been announced by **Ross Heat Exchanger Division of American-Standard. Fred M. Mahan** is manager.

A native of Frankfort, Kentucky, Mr. Mahan was graduated from Kentucky University in 1948 with a mechanical engineering degree. Entering the University in 1941, his course was interrupted by 3 years' service with the field artillery in World War II. He was an aircraft engine mechanic, servicing observation planes in the European theater.

Immediately following his graduation, Mr. Mahan joined the Ross organization in the sales-engineering department at Buffalo, N. Y. In November 1948, he became a sales-engineer in the Detroit office where he remained until his appointment in Decatur.

News (Continued)

Trane Co. — North Carolina

Two high-level appointments have been announced in **The Trane Company** sales organization. Trane is a leader in the air conditioning and heating fields.

William D. Graham, Jr., manager of the Trane sales office in Greensboro, North Carolina, for the past four years, has been promoted and transferred to the firm's home offices in La Crosse, Wisconsin, for specialized assignment.

He will utilize his extensive field work experience by specializing in sales office operation and procedure as part of the general sales staff and seek to augment liaison between field and home offices.

Taking over as manager of the Greensboro office is **E. A. Stroupe, Jr.,** who has been with the North Carolina staff since 1950.

Smith Reappointed

The reappointment of **Lewis M. Smith,** President, **Alabama Power Company,** Birmingham, Ala., as Chairman of the Committee on Commercial Uses of Atomic Energy of the Chamber of Commerce of the United States for the year 1956-57 has been announced by Chamber President John S. Coleman.

The Committee studies problems in the development of peacetime uses of atomic energy and recommends policy declarations of the Chamber relating to legislative and regulatory improvement in the atomic energy field.

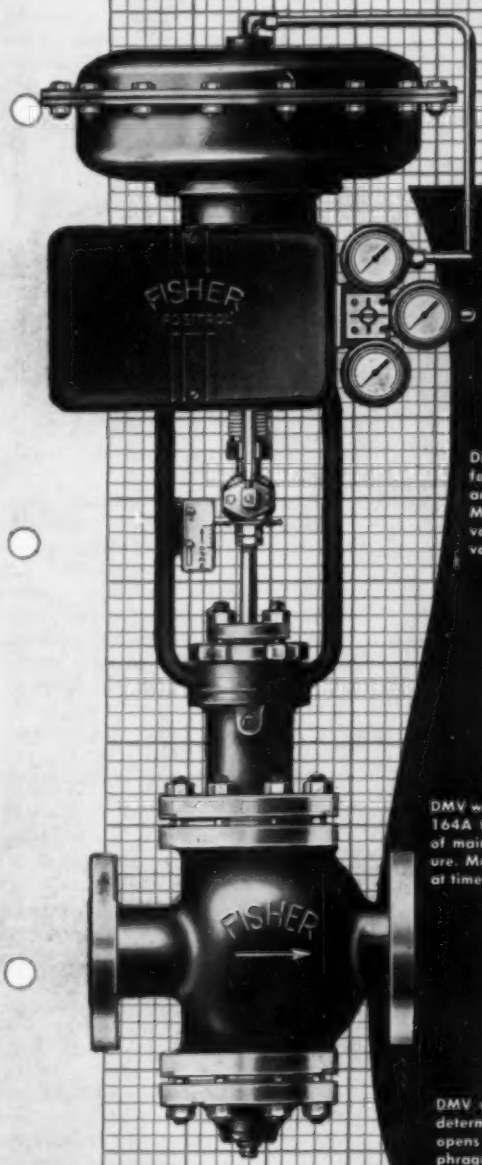
Unarco — South & Southwest

A. L. Hospers is now south-southwest regional sales manager for **Unarco Air Conditioning Products — National-U. S. Radiator Corporation,** Johnstown, Pennsylvania, it has been announced by F. S. Hudson, Jr., general manager of sales, Heating & Air Conditioning Division. Mr. Hospers, until recently, occupied the same position in the Air Conditioning Division of Union Asbestos & Rubber Company, Chicago, which was acquired in July by National-U. S. Radiator Corporation. Mr. Hospers will make his headquarters at 1119 Spring Street, N. W., **Atlanta, Georgia.**

FISHER®

THE ANSWER TO YOUR *Control Problem*

Built for your specific requirements, Fisher Diaphragm Motor Valves are manufactured to handle pressure conditions up to 30,000 pounds, for high pressure drops and are available in metals for highly corrosive service and alloys for high temperature work.



TYPICAL EXAMPLES OF FISHER DIAPHRAGM MOTOR VALVE WIDE RANGE ADAPTABILITY

DMV with Hand Jack Operator. Allows for manual operation against spring action. Limits travel of valve. Example—Maximum opening in spring opened valve. Minimum closing in spring closed valve.

DMV with Continuously Connected Handwheel. Operator can open or close valve against controller action. Can operate valve manually if operating medium fails. Can set maximum opening or minimum closing of inner valve.

DMV with Air Lock-up system using Type 164A to close air circuit to diaphragm of main valve in case of plant air failure. Main valve will be held in position at time of supply pressure failure.

DMV with Remotely Actuated Electric Solenoid Trip Out. Valve may be fully opened or closed by unloading operating pressure from diaphragm by solenoid operation. Solenoid is actuated from manual switch or an electric tie-in circuit.

DMV with Air Cut-out Feature. At predetermined pressure setting, unloader opens and bleeds pressure off diaphragm to keep main valve open. Unloader orifice is larger than controller orifice so main valve remains open. Operation restored by putting thumb over open end of unloader.

DMV with Auxiliary Controller Override. An auxiliary controller, such as temperature, placed in operating air line to diaphragm—can over-ride action of main control function by unloading diaphragm and taking over functional operation of DMV.

FISHER GOVERNOR COMPANY

MARSHALLTOWN, IOWA • WOODSTOCK, ONTARIO

LEADS THE INDUSTRY IN RESEARCH FOR BETTER PRESSURE AND LIQUID LEVEL CONTROL

FISHER *Since 1880*

News for the South & Southwest (Continued)

New Aluminum Producer to Have Southern Plants

Olin Mathieson Chemical Corporation and **Revere Copper and Brass Incorporated** recently announced the formation of a jointly owned $231 million company to produce 180,000 tons a year of primary aluminum. The company is to be called the **Olin Revere Metals Corporation.** Its formation was announced jointly by Thomas S. Nichols, president of Olin Mathieson, and James Kennedy, chairman and chief executive officer of Revere.

President of the new corporation will be Walter F. O'Connell, who will also continue as executive vice president in charge of Olin Mathieson's aluminum program. Ownership of Olin Revere will be on a 50-50 basis.

Olin Mathieson has contracted with Olin Revere on a long term basis for 120,000 tons of primary aluminum a year — twice the amount the corporation was to produce under its original program for entering the primary aluminum industry. Revere has made a similar contract with the new company for 60,000 tons a year.

Facilities of Olin Revere Metals Corporation will include:

1. An alumina plant with a capacity of 350,000 tons per year. This plant will be built on a site still to be selected near the **Gulf Coast** on deep water transportation.

2. A reduction plant with 180,000 tons per year capacity, which is now under construction at Olin Mathieson's original aluminum site near Clarington, Ohio. Previous Olin Mathieson plans called for a 60,000 ton reduction plant. Capacity production is expected to begin late in 1958 with some production before then.

3. A new power subsidiary wholly owned by Olin Revere, which will own two 250,000-kilowatt generating units in a new power plant at **Cresap, West Virginia.** These units will supply power to the reduction plant. A third 225,000-kilowatt unit at the power plant will be owned by Ohio Power Company, a subsidiary of American Gas and Electric Company. All three units will be operated by Ohio Power.

Arrangements have been made to provide the bauxite supplies required by an aluminum operation nearly three times the size of that originally planned. Bauxite will be furnished from the Surinam, Dutch Guiana, mines of N. V. Billiton.

Bauxite will be processed into alumina at Olin Revere's plant on the Gulf Coast. Alumina will be transported by barge up the Mississippi and Ohio Rivers to the Clarington plant, where it will be reduced to aluminum.

Half of the 120,000 tons of aluminum contracted for by Olin Mathieson will be fabricated at a new rolling mill now being built near Clarington and the remainder in mid-West and West Coast plants.

Revere will use part of its 60,000 tons of aluminum at its Baltimore, Md. plant in its aluminum sheet, tube and extruded shapes departments.

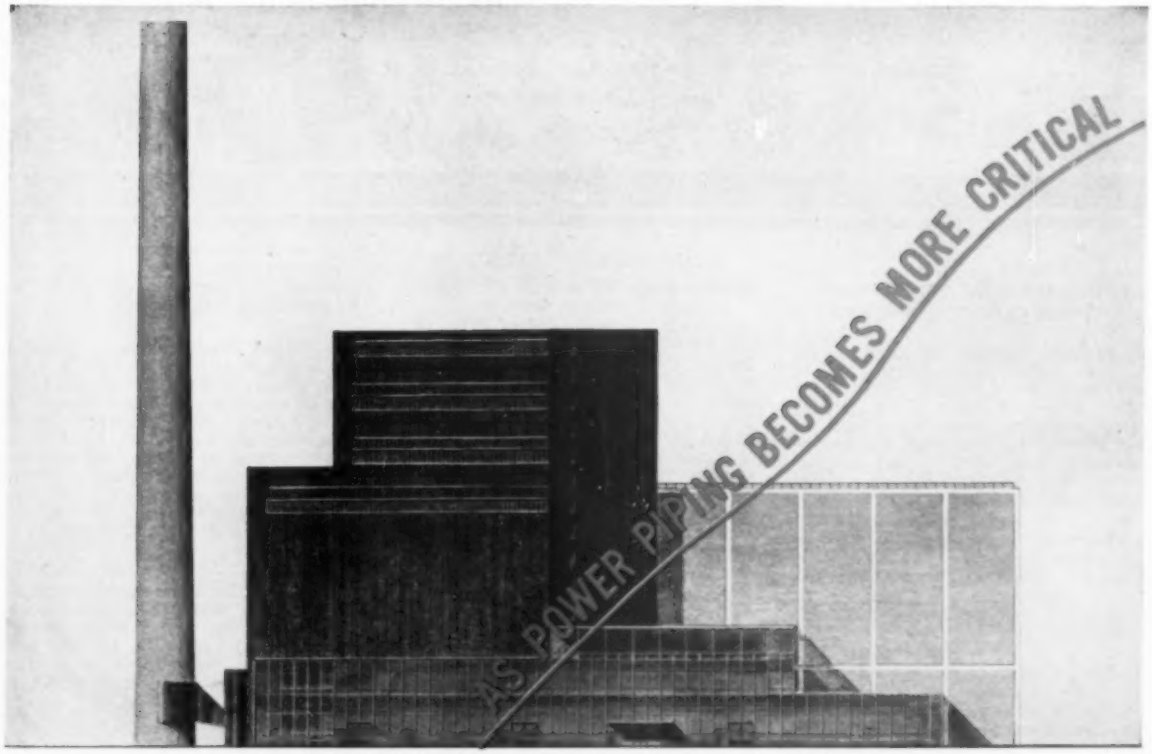
Olin Mathieson's original plans marked the first time in the history of the aluminum industry where coal mined directly on the site would provide the large power requirements for the reduction of alumina to pig aluminum. Coal will be mined directly on the site of the power plant at Cresap, West Va. (across the Ohio River from Clarington) by the Pittsburgh Consolidation Coal Co., Inc. Power from the generators at Cresap will be transmitted to the reduction plant.

Dravo — Georgia

Felix J. Commagere, 157 Simpson St., N. W., Atlanta, Georgia, has been appointed distributor of Dravo heating equipment throughout the State of **Georgia** with the exception of eleven counties in the northeast corner. **Dravo Corporation,** Pittsburgh, Pa., is one of the world's largest manufacturers of industrial and commercial warm air space heating and process drying equipment.

As distributor, Commagere will sell Dravo's complete line of oil and gas fired units. These include the Counterflo, Paraflo, and Gas-Fired suspended type heater models, covering a range of capacities from 40,000 to 2,000,000 Btu per hour output.

(*More News on Page* 91)



Architect's sketch of Philadelphia Electric Company's new Eddystone station

Kellogg's High Alloy Fabrication Keeps Pace

Designed to operate at 5000 psi at turbine throttle valve, and 1200 F., Unit No. 1 at Philadelphia Electric Company's new Eddystone station presented critical problems in the selection of an alloy for supercritical pressure piping, and in techniques for fabricating heavy-walled sections of this alloy in the shop and in the field.

More than a year ago, The M. W. Kellogg Company presented a comprehensive program to the Philadelphia Electric Company for selecting a suitable alloy, and since then has been working closely with this public utility and other prime contractors toward completion of the project. Numerous materials were studied, welded, tested, heat treated, and evaluated at Kellogg's Jersey City metallurgical laboratories. After many months of extensive and intensive work, Type 316 Stainless was selected. M. W. Kellogg has already perfected welding techniques, and is now continuing tests on this alloy and several other compositions, including strain aging for 1000 hours and 10,000 hours at 1300 F., to accumulate other data.

While this is the first time that Type 316 will have been used in power plant service for temperatures as high as 1200 F., and pressures as much as 5000 psi, it is by no means Kellogg's first experience with Type 316 or other stainless steels. For example, M. W. Kellogg recently undertook metallurgical studies and research for another large public utility prior to its selection of Type 316 for use at 1100 F. and 2400 psi. Kellogg also has done considerable fabrication of main steam lines and turbine leads, using Type 347.

The M. W. Kellogg Company welcomes the opportunity of discussing future power piping requirements with consulting engineers, engineers of power generating companies, and manufacturers of boilers, turbines, and allied equipment.

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WHERE TO GET IT *And How to Do It*

—INDEX OF HELPFUL BOOKLETS, BULLETINS, REFERENCE LITERATURE—

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

3—Boiler Cleaning — The Vulcan sequential, automatic soot blowing system, described in Bulletin 483, offers effective, economical boiler cleaning. Any boiler can be cut in or out of automatic sequence or blown individually from control panel. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

5—Turbine Generators — 1500 to 15,000 kw range covered in 35 p Bulletin 1960C-P. Types, applications, construction, and typical installations are featured.—WORTHINGTON CORPORATION.

9—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose.—NORFOLK AND WESTERN RAILWAY.

10—Water-Cooled Stoker — Catalog describes completely water-cooled Vibra-Grate stoker which burns low grade fuels without smoke at either low or high ratings. No dust collectors necessary. — AMERICAN ENGINEERING COMPANY.

11—Feedwater Treatment — Bulletin describes liquid and dry (Braxon & Flako) boiler feedwater treatment recommended for removal and prevention of scaling and corrosion during use of many types of water and for prevention of foaming and carryover. — ANDERSON CHEMICAL CO.

12—Spreader Stoker — Bulletin 897 — Describes a spreader stoker with overthrow rotors that provide exceptionally uniform fuel distribution. Available in stationary, hand dumping and power dumping grates, in many sizes for many types of application. Also burn various kinds of wood and refuse. — DETROIT STOKER CO.

15—Stokers — Bulletin covers complete line of underfeed coal stokers and units for profitable disposal of wood waste; illustrated case studies; meet any city's smoke ordinance. — McBURNEY STOKER & EQUIPMENT COMPANY.

35—Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions.—CLEAVER-BROOKS CO.

60—Packaged Generator — Bulletin PG-55-3 outlines features of new generator line in capacities from 10,000 to 46,000 lb/hr. Shipped completely assembled — all ready for fuel, steam and electrical connections. — FOSTER WHEELER.

61—Ash Removal — Bulletin S-56 shows how costs can be reduced with a National pneumatic steam-operated or motor-driven air exhaust type system. High operating efficiency based on tons of ash handled per pound of steam used.—NATIONAL CONVEYORS COMPANY, INC.

76—Gas Burner — Bulletin — Describes the Rectilinear gas burner, an application of the venturi principle which provides high input through narrow rectangular openings for firing — in a horizontal plane through fire doors or small openings over handfired coal grates or stokers — or for firing in a vertical plane on either side of stoker or oil burner.—THE WEBSTER ENGINEERING COMPANY.

89—Solid-Wheel Turbine — Bulletin S-116 gives complete details on Terry solid-wheel turbo-geared units; blades cannot foul; no need for close axial blade clearance. — TERRY STEAM TURBINE COMPANY.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

116—Air & Gas Compressors—Form 3132-A shows complete range of centrifugal and reciprocating units used in process and chemical industries — for all pressures from deep vacuum up to 35,000 psi and capacities up to 165,000 cfm. — INGERSOLL-RAND COMPANY.

122—Industrial Fans—Bulletin 702A covers type XL Fans having 11" thru 60" inlet diameters, pressures to 18" SP, volumes to 130,000 CFM for industrial air and material handling.—CLARAGE FAN CO.

142—Centrifugal Pumps — Bulletin 720.4 gives interesting facts on the new Multi-purpose centrifugal pump line; specifications and performance curves.—GOULDS PUMPS INC.

167—Rotary Pumps — Bulletin 307— Describes the features and advantages, and outlines the engineering details of Blackmer rotary pumps. These have been manufactured since 1904 and incorporate the outstanding advantages of "automatic adjustment for wear," and economical replacement of parts. — BLACKMER PUMP CO.

168—Boiler Feed Pumps — Catalog highlights the new DVMX split case pump engineered for medium size power plants; delivers capacities to 2200 gpm, heads to 1200 psig, and temperatures to 350 F. Split case permits removal of top half of case and complete rotating element without disturbing the piping. — BYRON JACKSON, DIVISION OF BORG-WARNER CORPORATION.

172—Pumps — Catalog A-156 covers double-suction, general purpose, single-stage centrifugal pumps for general service wherever liquids of low viscosity are to be moved; low maintenance; sizes up to 10 in. discharge.—C. H. WHEELER MANUFACTURING CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

201—Flowmatic Boiler Feed Control — Bulletin 1003, 12 pages — Gives applicational photos and detailed schematic drawings and charts. Relay and direct operation are covered. Case studies of representative boiler loads indicate stability of Flomatics in controlling feedwater automatically according to steam flow. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

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217—Water Columns and Gages — Bulletin 9-2-52, 4 pages — Illustrates and describes a line of boiler specialties, including round body water gages, safety water columns, round body bronze gages, liquid level gages. Tables and specifications. — ERNST WATER COLUMN & GAGE COMPANY.

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers, small engines, etc., described in Bulletin 710B; operational and hook-up sketches.—SARCO COMPANY, INC.

226—Pressure Gauges — Ashcroft Gauge Catalog, 124 pages—Information on pressure gauges, gauge accessories and gauge engineering, sectionalized by product lines, fully indexed, with selector tables for all gauges. Illustrated with photographs and line drawings. — MANNING, MAXWELL & MOORE, INC.

264—Level Controller—32 page Bulletin F-4 describes the principle of operation of the displacement type float and illustrates the construction available for many applications that can use this pneumatic level controller.—FISHER GOVERNOR COMPANY.

290—Small-Size Gauges & Receivers — Bulletin V5 covers new line of easy-to-read gauges and receivers which save panel space, make more compact groupings and still get accuracy and dependability. Five inch illuminated scales; multiple or individual mounting — draft, pressure & vacuum, differential pressure, temperature. — REPUBLIC FLOW METERS CO.

293—Trouble Free Recording — E12-5 describes new hermetically sealed, non-evaporating, non-corrosive inking system on company's recorders. Transparent plastic ink sacs are changed once a year. Capillary tubing carries fresh, clean ink to pens continuously without day-to-day attention. — BAILEY METER COMPANY.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

303—Trash Burners — Bulletin 52S describes a simple, cost-saving disposal method. Portable units available in 200, 300 and 500 lb/hr capacity. Stationary units from 400 to 5000 lb/hr. Peak combustion; no stoking; no burning embers or hot ashes can fall on floor. — BRULE INCINERATORS.

304—Backing Rings — Bulletin 56-2 describes rings designed for fast, economical fit-up in piping, tubing, fittings and valves. Shows how rings assure uniform complete-penetration welds and ease of handling in both shop and field. Carbon steel, wrought iron, chrome alloys, stainless, aluminum and copper. — ROBVON BACKING RING COMPANY.

306—Steel Buildings — Catalogs cover Series S buildings (clear span widths from 4-40 ft) featuring Steelox panel construction; and Series P buildings (clear-span widths up to 100 ft); fire resistant & weather tight; simplified design eliminates much job-site labor. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

315—Pressure Vessels — Catalog 100 discusses your plate fabrication problems and shows how company

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custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

326—Grating—Flooring — Catalog, 12 pages — Gives picture story of "Weldforged" steel grating, flooring and stair treads — continuous spiral cross bars, alternating right and left, and slightly above bearing bars, electronically weldforged into inseparable units to insure greater non-skid protection and durability. —KERRIGAN IRON WORKS, INC.

334—Electric Power Hammer—Drilling, routing, cleaning, caulking, chipping are among many maintenance and construction applications described in Bul. 5199. Drills holes up to 1⅛" in diameter; 2300 blows per minute; weighs only 12 lb, 13 oz. — INGERSOLL-RAND.

351—Steel Grating & Treads—Bulletin 2486 describes electroforged steel grating and treads, their advantages and typical successful applications.—BLAW-KNOX EQUIPMENT DIVISION, BLAW - KNOX COMPANY.

370—Welding Rod Guide — 32 page DirectoRod Guide helps you select from 160 rods those that will give you the largest savings per job, whether production, maintenance or salvage. — EUTECTIC WELDING ALLOYS CORP.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings"—low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. —ATLANTIC STEEL COMPANY.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

404—Pipe Unions — 26 p illustrated bulletin covers Jefferson line of pipe unions, giving sizes, capacities of unions, union ells, union tees and flange unions. — JEFFERSON UNION CO.

408—Wide-Range Valves — Data Sheet 10-5 covers the "Point 4 Factor Trim" — answer to those few types of applications where reduced capacity trim is desirable. Available in V-port and solid turned designs for double or single seated valves and in wide variety of material.—MASON-NEILAN DIV.

433—Renewable Seat Ring Gate Valve — Bulletin V-123 shows how you can replace seat rings in less than 10 minutes with valve body still installed in the line. 200 lb valves available in sizes ½" thru 2".—THE FAIRBANKS COMPANY.

437—Piping For Permanence—Bulletin covers a variety of services where wrought iron pipe saves because it serves longer. Corrosion costs you more than wrought iron.—A. M. BYERS COMPANY.

440—Liquid Filters—12 p Bulletin 300 contains engineering and performance data, photos, descriptions of filtering media, recommended use of each, etc. — DOLLINGER CORPORATION.

461—Reducing Valves—Data sheets describe Type CV-D (diaphragm) and Type CV-P (piston) reducing valves for application at unlimited pressures for pipe sizes up to 16". Either direct or reverse action; high

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700	705	711	712	718	721	735	745	749	800
805	838	852	871	909	936	937	W-1	W-2	W-3
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495 — Blow-Off Valves — Bulletin E-125 describes design and construction of quick-operating valves, angle valves, Y valves and duplex units specifically designed for boiler blow-off service. — EVERLASTING VALVE CO.

MAINTENANCE PACKING GASKETS, LUBRICATION

502—Hazardous Liquid Gasket Material — How type 662 gaskets can stand varying climatic conditions without drying, shrinking, or hardening described in Bulletin AD-146. For use against gasoline, water and oil at temperatures up to 300 F. Has Underwriters' Laboratories, Inc. approval. — THE GARLOCK PACKING COMPANY.

503—Plastic Repair Compound — Folder tells how Celastic & BBX can be used to make permanent repairs to duct work, fan housings, to waterproof cracked and leaking concrete, cover exterior insulation — 1001 uses as general repair item in any plant.—WILSON AND MANKIN.

508—Spray Lubricant — Data sheet describes the Marla open gear spray lubricant in Aerisol cans for use on open gears, cams, monorails, guides, chains, sprockets, etc. Economical, heavy duty and easy-to-use. —ROTHLAN CORP.

511—Maintenance Ideas—"Genius at Work" — Contains ideas about plant maintenance, bits of philosophy, new products and a description of the company's line. — KANO LABORATORIES.

527—Wear-Free Packings—File No. DMSP describes complete line of metallic and semi-metallic packings. — DURAMETALLIC CORPORATION.

528—Industrial Products — Bulletin GI-6A, 40 pages — Describes J-M industrial products intended to save industry millions of dollars every year — insulations, refactory products, asbestos-cement pipe, packings and gaskets, electrical products, friction materials, roofing and siding, flooring, partitions and ceilings. — JOHNS-MANVILLE SALES CORPORATION.

583—Condensate Corrosion — Bulletin No. 35, 4 pages—Describes the causes of condensate corrosion in return lines, heaters, tanks and describes methods of stopping it with various Nalco products. Well illustrated. — NATIONAL ALUMINATE CORP.

596—Tube Cleaners & Expanders — Catalog 77 covers tubes in high pressure boilers, superheaters, economizers and other heat exchange equipment. Model 38 expander rolls and flares in single operation. — THOMAS C. WILSON, INC.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

700—Water Conditioners—4 p brochure describes Anco water conditioners for hot-water and humidifying systems. Stop rust and corrosion; prevent discolored water. — ANDERSON CHEMICAL COMPANY, INC.

705—Test Your Tower—Bulletin offers simple, proven method by which you can determine how closely your actual tower performance measures up to specified performance. Particularly applicable to operations geared to temperature of process cooling water. — THE MARLEY COMPANY.

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711—Refrigeration Condensers—Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost.—HENRY VOGT MACHINE COMPANY.

712—Ion Exchange Equipment — Bulletin A-255 describes the various methods of ion exchange treatment which provide suitable boiler feedwater, process water, and purified solutions.—ILLINOIS WATER TREATMENT CO.

718—Zeolite Softeners — 32 p catalog 4520-B describes the sodium zeolite softening process in detail. Contains data required for proposals, lists factors important in selection of proper zeolite material and in sizing of equipment. Single valve controls all cycles of service and regeneration. — COCHRANE CORPORATION.

721—What Type Collector?—Reprint 102 discusses control of industrial dusts and flyash and features P-D Collector Systems.—THE THERMIX CORPORATION.

735—Refrigerating Machine—Bulletin 1426 describes the Tonrac single-stage hermetic centrifugal refrigerating machine, which maintains constant chilled-water temperature regardless of load. Single level construction simplifies installation.—AMERICAN BLOWER CORPORATION.

745—Dust & Fume Control — 40 p booklet gives helpful information on recovering dusts, fly ash, mists, fumes and other suspensions of gases. Summarizes important points design and plant engineers should know about electrical precipitators. — WESTERN PRECIPITATION CORPORATION.

749—Unit Heaters—Horizontal and down flow heaters, for use with steam or hot water, described in Catalogs 322 & 762. Ripple-Fin construction assures maximum heat transfer at lowest operating cost. Standard coils guaranteed up to 150 psig, saturated steam and 375 F.—McQUAY, INC.

ELECTRICAL

800 — Cords & Cables — Bronco 66 Certified electrical cables described in new brochure. Electrical cords & cables made with 66% Neoprene jacket. — WESTERN INSULATED WIRE CO.

805—Power Factor Correction — 28 page catalog shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations.—SPRAGUE ELECTRIC CO.

838—Electric Power Drives — Scale Drawings, 22 sheets—Illustrate and describe geared, electric power drives for design engineers, draftsmen and layout engineers. Three views are detailed on each sheet with the frame and type drawn to three separate scales, from ½ hp to 30 hp capacity. — STERLING ELECTRIC MOTORS, INC.

852—Autotransformer Starter—with air break contacts up to 75 hp, 220 v; 150 hp, 440-550 v is described in Bulletin 646. Silver alloy contacts stay in good condition without filing, cleaning or dressing. — ALLEN-BRADLEY.

871—Electrical Protection — Protection Handbook — Tells how to protect motors, apparatus and circuits. Gives National Electrical Code requirements in simplified form. Designed to help the electrical or plant maintenance engineer. — BUSSMANN MFG. CO.

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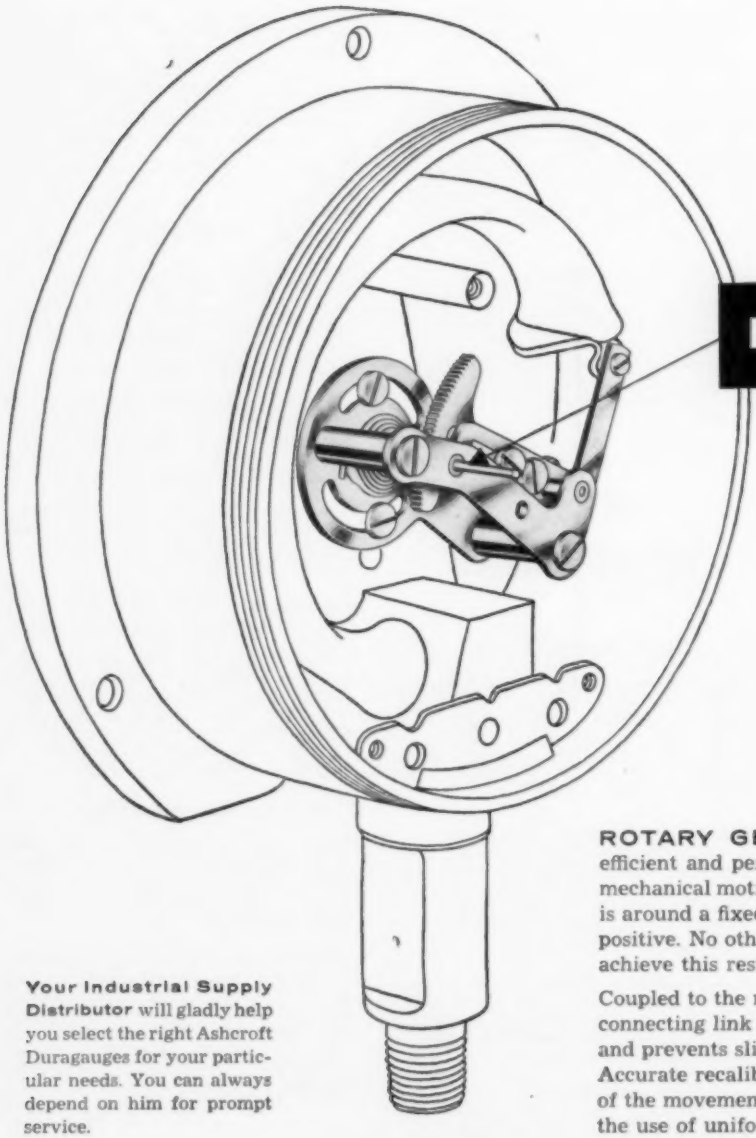
909—Industrial Skin Cleanser—Folder describes Vi-Lan Clean, a non-alkaline, non-acid, all-purpose antiseptic skin cleanser that prevents dermatitis and other skin conditions. Self - service dispensing units. — DAMERON ENTERPRISES, INC.

936—Stock & Weight Handbook — 84 pages, gives complete information on all sizes and shapes of stainless and carbon steel products normally carried by steel warehouses. Useful charts and tables.—WAREHOUSE DIVISION, ATLANTIC STEEL COMPANY.

937—Steel Measuring Tapes — Complete catalog describes full line of measuring tapes from 6 to 100 ft, including wide blade tape with upright measurements. — EVANS RULE CO.



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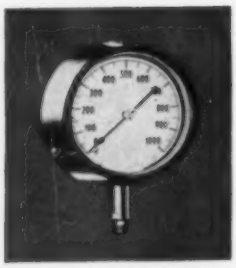

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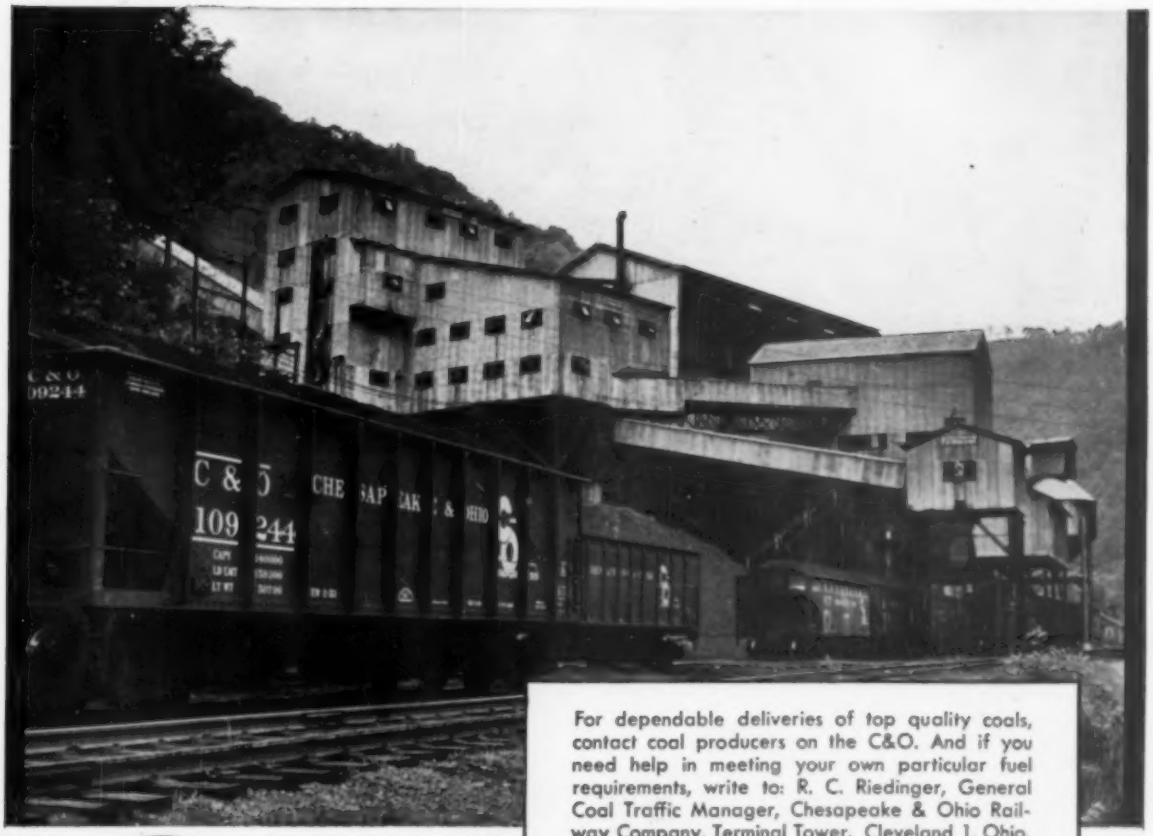

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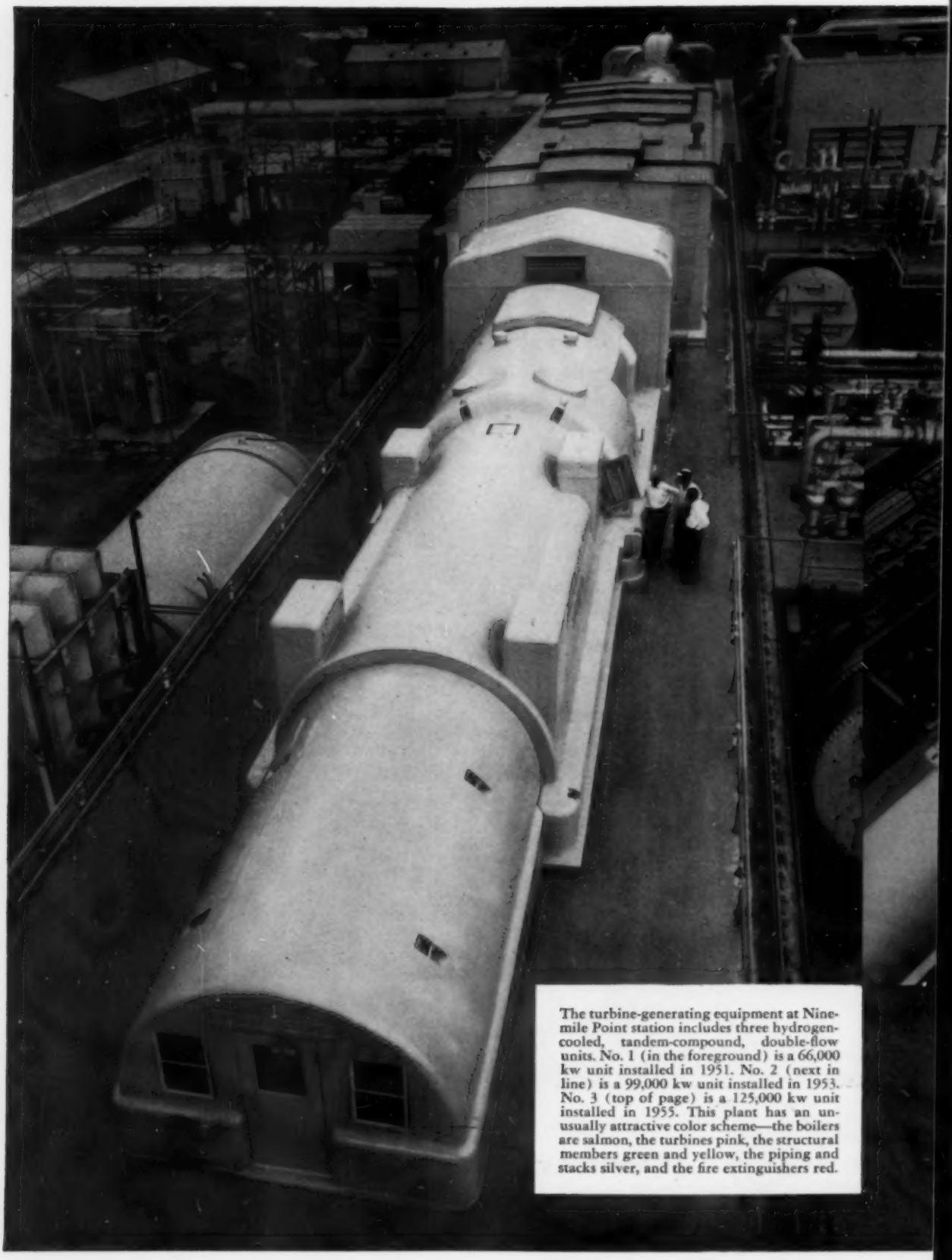
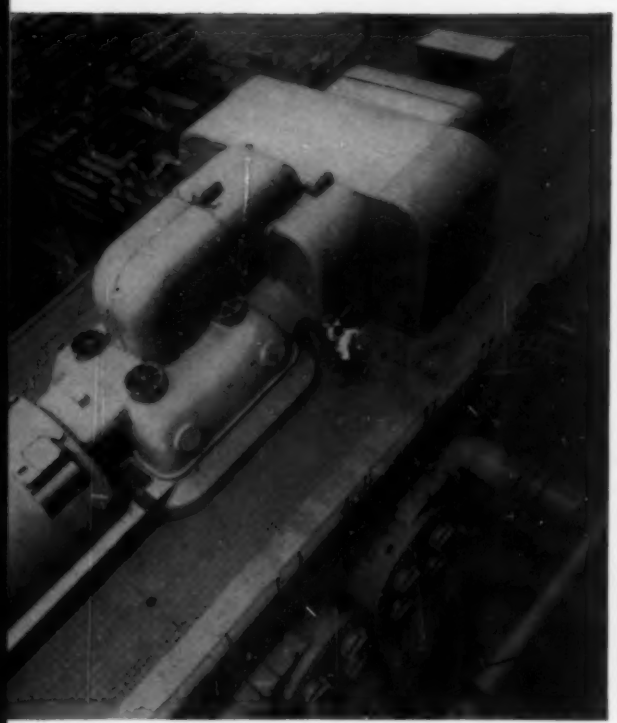


The turbine-generating equipment at Ninemile Point station includes three hydrogen-cooled, tandem-compound, double-flow units. No. 1 (in the foreground) is a 66,000 kw unit installed in 1951. No. 2 (next in line) is a 99,000 kw unit installed in 1953. No. 3 (top of page) is a 125,000 kw unit installed in 1955. This plant has an unusually attractive color scheme—the boilers are salmon, the turbines pink, the structural members green and yellow, the piping and stacks silver, and the fire extinguishers red.

Modern, efficient NINEMILE POINT plant uses the modern, efficient turbine oil:

GULFCREST



Close up of recently installed (1955) 125,000 kw turbine generator.

Pictured here are the turbine-generating units at the Ninemile Point station of Louisiana Power & Light Co., New Orleans, Louisiana, reported to be the most fully automatic utility power plant in the U.S.

For safe, sure, long-lasting protection of this key equipment, the lubrication is entrusted to Gulfcrest, the super-refined turbine oil.

After the base stock for Gulfcrest has gone through the usual steps employed in refining other turbine oils, it is processed by an extra refining step—the exclusive Gulf Alchlor Process —which produces a pure and stable lubricant that delivers unmatched performance.

The next time you fill a turbine system, make it a fill for the finest, longest lasting protection by specifying Gulfcrest, the world's finest turbine oil. An experienced Gulf Sales Engineer will recommend the proper grade to meet your specific requirements.

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GULF

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Pardon us for giving advice, but this is the kind of advice that can save you money.

It concerns tubing selection—our number one specialty.

As you know, the ideal material selection for an installation is not always the most expensive pipe or tubing. Yet, some people have a tendency to over-specify — pick a better, costlier tubing than is actually needed. And this happens more often than you might think.

But it doesn't have to happen. If you'll get in touch with National Tube before you buy, our technically trained Mill Service Force will analyze your specifications, at no cost to you. If your installation calls for low carbon tubing, that's what we'll specify. Our responsibility is to prescribe the most suitable materials for the job, at the lowest cost to you. And we never lose sight of the fact that every installation is an individual problem in material selection and must be treated as such. Our Mill Service Force is also available for consultation in the field.

National Tube manufactures seamless pipe and tubes in a complete range of steel analyses from low carbon, through the alloys up to and including stainless steels. A wide range of sizes and wall thicknesses is available for every mechanical and pressure purpose.

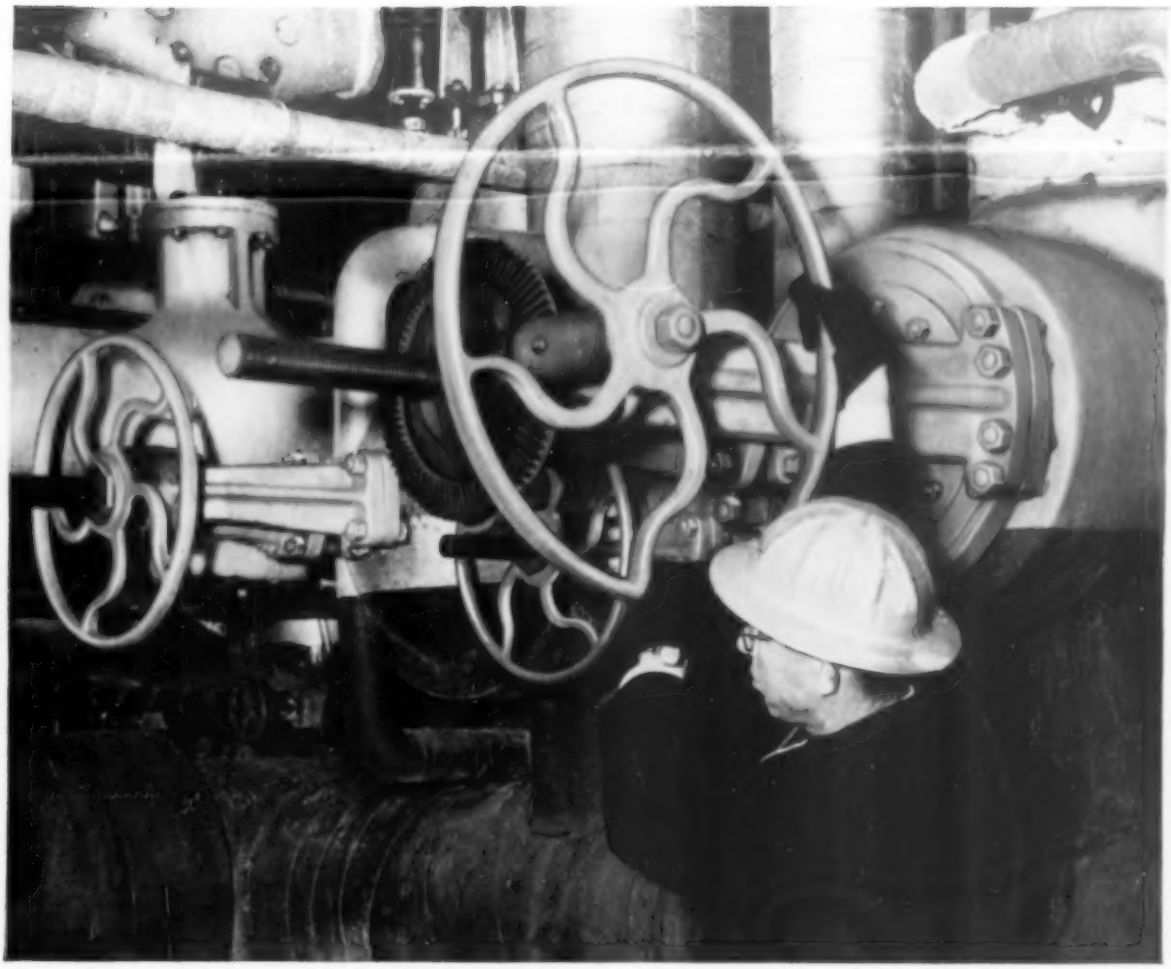
Contact us at your convenience.

See The United States Steel Hour. Televised alternate weeks. Consult your local newspaper for time and station.

National Tube Division, United States Steel Corporation, Pittsburgh, Pa.
(Tubing Specialties)
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors · United States Steel Export Company, New York

USS NATIONAL SEAMLESS PIPE AND TUBES

UNITED STATES STEEL



12 years' cost-free service completed by this Crane valve on saturated steam

Since 1944, this Crane 16-inch Pressure-Seal gate valve has been handling 450 psi saturated steam. It's working as a stop valve on a header in the Neches Butane Products Company's butadiene plant in Texas.

When opened for inspection recently—after 12 years of hard service—this rugged Crane valve was found to be in perfect condition. Not once has it leaked or needed maintenance at the bonnet joint or seat.

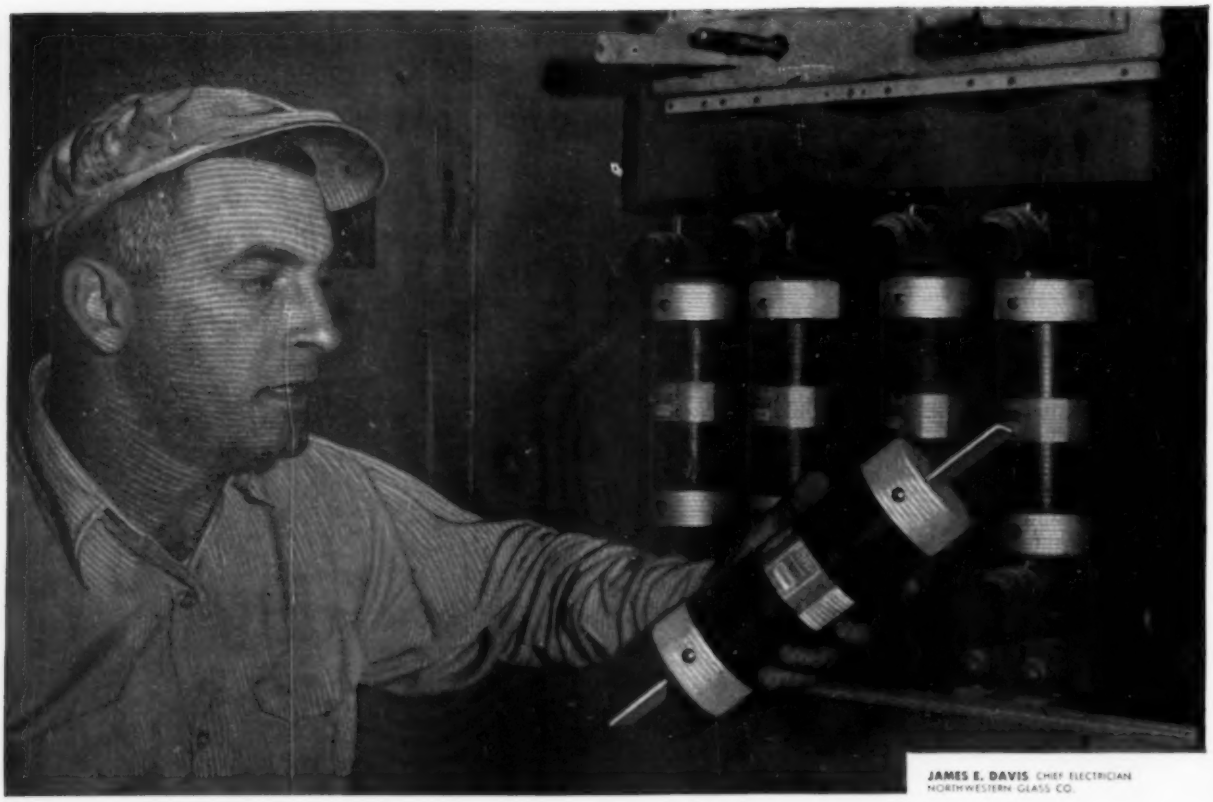
Here's why: instead of depending on bolting to retain pressure, the Crane Pressure-Seal bonnet design utilizes internal fluid pressure to make a leak-free, maintenance-free joint. And with the Crane flexible wedge disc—self-adjusting to temperature changes—sticking of the disc is eliminated, and operation is always smooth and easy.

Because they're so trouble-free, and so compact and streamlined (saving line weight and simplifying insulation), Crane Pressure-Seal Bonnet Valves are giving consistent satisfaction on high-pressure, high-temperature power plant service. Get full information from your local Crane Representative, or write to address below.

CRANE VALVES & FITTINGS

PIPE • KITCHENS • PLUMBING • HEATING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas



JAMES E. DAVIS CHIEF ELECTRICIAN NORTHWESTERN GLASS CO.

"Our Production schedule was frequently disrupted by needless shutdowns on a line of motors . .

until we changed to Fusetron Fuses"

James E. Davis.
CHIEF ELECTRICIAN, NORTHWESTERN GLASS COMPANY
SEATTLE, WASHINGTON

"Ordinary 500 amp. renewable fuses were blowing frequently in a 1000 amp. switch that controls a line of motors ranging in sizes up to 150 hp.

"We work on a tight production schedule, so these shutdowns with men and motors standing idle were costing us a considerable amount of money and trouble.

"As chief electrician, the problem was 'thrown in my lap'.

"A study of the situation indicated that harmless surges were causing the fuses to blow.

"We figured that the long time-lag of Fusetron dual-element fuses might correct the trouble.

"They were installed in 1953 and the original Fusetron fuses are still in service.

"We think this is quite a record because the switch is loaded to capacity 24 hours a day 7 days a week, only Christmas and July 4th excepted."

Here's why Fusetron Fuses give all purpose Protection

A fuse link combined with a thermal cutout - the result, a fuse with tremendous time-lag and much less electrical resistance and an interrupting rating in excess of 100,000 amps.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

Made to same dimensions as ordinary fuses. FUSETRON Fuses fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 amperes, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly low.

Write for bulletin FIS.

THOMAS F. CURRAN
MACHINE OPERATOR

FOR LOADS ABOVE 600 AND UP TO 5,000 AMPS., USE BUSS Hi-CAP FUSES . . .

They have unlimited interrupting capacity to handle any fault current regardless of system growth.

They can be coordinated with Fusetron fuses on feeder and branch circuits to limit fault outages to circuit of origin.

Write for bulletin HCS.

FUSETRON DUAL-ELEMENT FUSES DO MORE THAN ELIMINATE DOWN PERIODS CAUSED BY NEEDLESS BLOWS . . .

They Provide 10 Point Protection . . . .

1. High interrupting capacity — protect against heaviest short-circuits. Have proven on tests to open safely on circuits set to deliver in excess of 100,000 amperes.
2. Protect against needless blows caused by excessive heating — lesser resistance results in cooler operation.
3. Protect against needless blows caused by harmless overloads.
4. Provide thermal protection — for panels and switches against damage from heating due to poor contact.
5. Protect against waste of space and money permit use of proper size switches and panels.
6. Protect motors against burnout from overloads.
7. Give DOUBLE burnout protection to large motors — without extra cost.
8. Protect motors against burnout due to single phasing.
9. Make protection of small motors simple and inexpensive.
10. Protect coils, transformers and solenoids against burnout.

***Play Safe!* install FUSETRON dual-element Fuses and BUSS Hi-Cap Fuses throughout entire Electrical System!**

BUSSMANN MFG. COMPANY
(Division of McGraw Electric Co.)
UNIVERSITY AT JEFFERSON ST. LOUIS 7, MO.

For more information, use Reply Card—Page 17

FACT: The new Life-Line A has stronger insulation than any motor on the market

Meaning what? Simply that the new Westinghouse Life-Line® "A" motor with new *fortified insulation* can withstand heavier overloads and operate at higher temperatures than any other motor you can buy. That's electrical system improvement!

There are equally important advances in the Life-Line "A" mechanical and lubrication systems. It takes the right combination of *all three systems* to build industry's most preferred "power package".

Get all the facts from your Westinghouse sales engineer —The Man With The Facts. J-21894-A

YOU CAN BE SURE... IF IT'S
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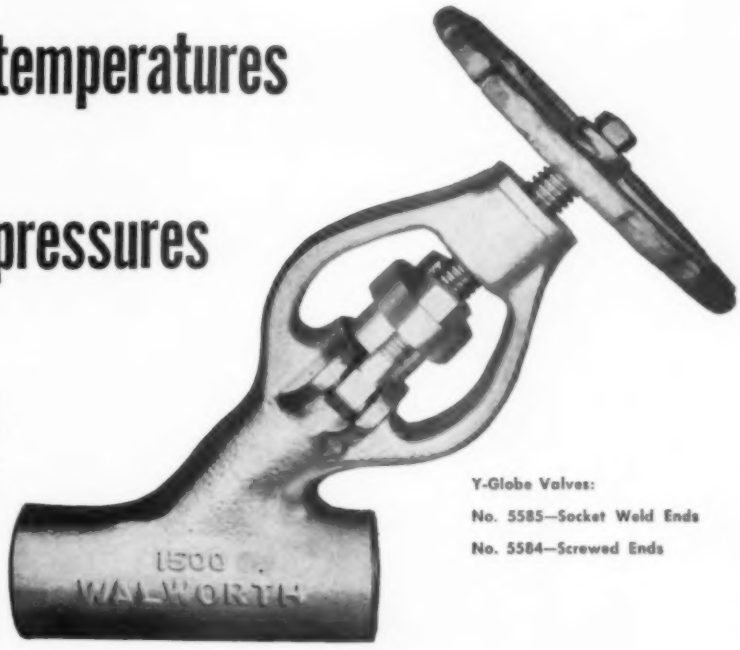
Walworth's NEW small cast steel valves

SERIES 1500 – SIZES ¼ to 2 inches

handle { HIGH temperatures / HIGH pressures



Y-Globe Valves:
No. 5585—Socket Weld Ends
No. 5584—Screwed Ends

Walworth is proud to make these new Small Cast Steel Valves available to power stations . . . oil refineries . . . ships . . . wherever piping is subject to severe pressures and temperatures. Non-shock service ratings of these valves: 1500 psi–950F for steam; 3600 psi–100F for water, oil or gas. Cast of chromium molybdenum steel, they are compact and light, yet exceptionally strong. Both Y-Globe and Angle type valves are available.

Angle Valves:
No. 5587—
Socket Weld End
No. 5586—
Screwed End

Simplified Walworth design eliminates many of the valve problems encountered in high pressure service. Among the features of this new valve are:

INTEGRAL BODY AND YOKE – made from a single casting without threading or welding. Bonnet joint — always a potential source of leakage — is eliminated. Valves can be reassembled quickly and easily.

ROTATING DISC – prevents valve seat distortion and consequent leakage. Cuts down replacements.

WELDED SEAT RING – compensates for changes in pressure and temperature—eliminates a major source of leakage.

SPECIAL BACK SEAT BUSHING – permits repacking the valve under pressure with greater safety.

PACKING CHAMBER – designed to dissipate heat thus keeping packing rings at lower temperatures—gives them longer life.

These valves are available with either socket weld ends or screwed ends, in sizes ranging from ¼ to 2 inches. For further information on Walworth series 1500 Small Cast Steel Valves, see your local Walworth distributor, or write for Circular No. 134.

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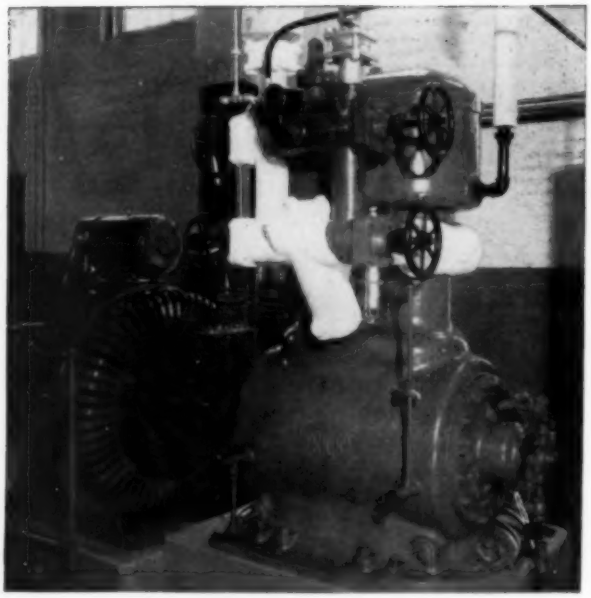

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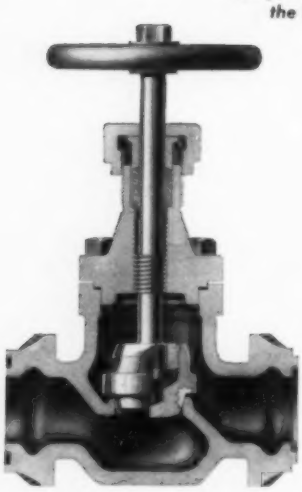
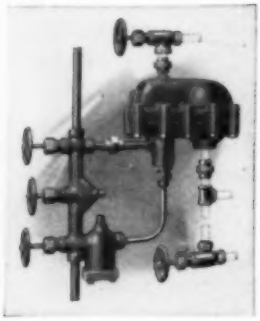
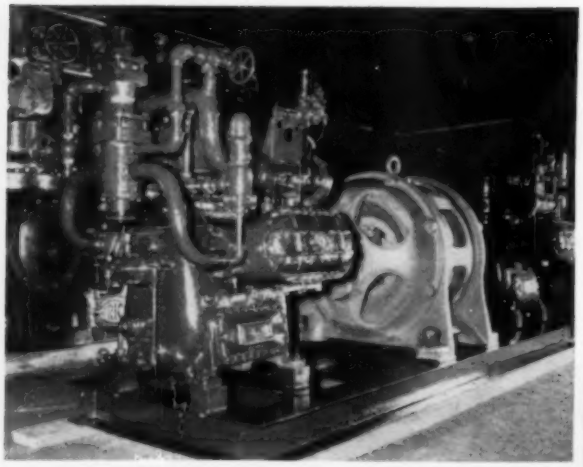


Frick Valves Have High-angle Seats and Oversized Stems, Are Good For Many High-Pressure Jobs

Condensers, Coils and Coolers Are Furnished in All Types and Sizes



Float Control Valve with By-pass Manifold and Strainer



"ECLIPSE" Ammonia Booster and High-Pressure Machines Have Multiple Cylinders, High Running Speeds

Whether you need a compressor, condenser, cooler, coil or control—you get only the most dependable when you insist on equipment bearing the Frick trademark. Generations of experience with ammonia refrigeration are back of our recommendations and products: write for literature and estimates on your requirements.

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It's in the Bag!

Fresh, Clean Ink for a Year of Trouble-free Recording

★ You won't have any messy, time-consuming re-inking of pens on the new Bailey Recorders. The entire system is white-glove clean—hermetically sealed, non-evaporating, non-corrosive. Gone is any chance of sludge or oxide formation. Gone are clogged pens, interrupted records, unsightly splashes.

The transparent plastic ink sacs are changed once a year—that's all. Capillary tubing carries fresh, clean ink to the pens continuously without any day-to-day attention.

This exclusive new inking system* is only one of the many time-saving, money-saving distinctive features of the new Bailey Recorder.

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*Now available for the New Bailey Recorder only.

ONLY BAILEY OFFERS ALL THESE ADVANTAGES IN A SINGLE RECORDER

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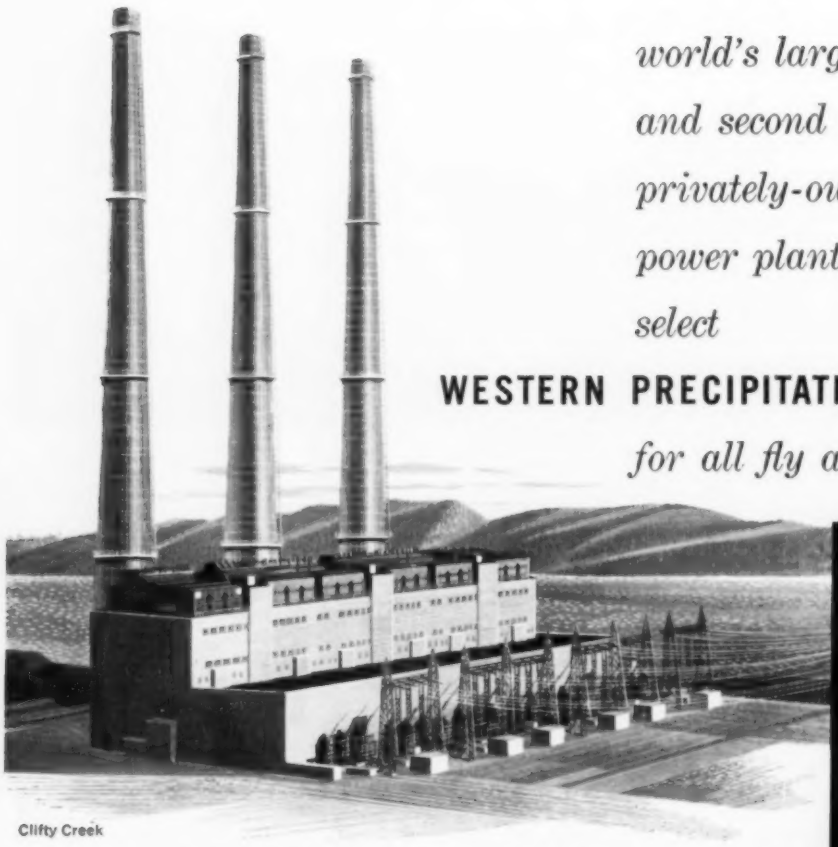
WESTERN PRECIPITATION CMP UNITS

for all fly ash recovery!



Clifty Creek

Kyger Creek

In the Ohio Valley area a new industrial miracle is now completed. Fifteen private utility companies have joined forces as the Ohio Valley Electric Corporation to construct the world's largest and the world's second largest privately-owned electric power plants.

The project is not only the largest single undertaking in the entire history of the electric utility industry, but also one of the most modern. *And it is highly significant that, with so much at stake, Western Precipitation integral CMP (Combination Multiclone-Precipitator) Units were selected to handle the entire fly ash recovery operation.*

At the larger of these two modern new plants—Clifty Creek Plant near Madison, Indiana—six CMP Units are installed. At the other—Kyger Creek Plant near Cheshire, Ohio—five CMP Units are installed. In both plants the recovery operation is identical. Flue gases from the boilers first pass through Multiclone sections where the heavier suspensions are mechanically recovered by small-tube *cyclonic* separators. The partially-cleaned gases then flow on into Cottrell Electrical Precipitators where final clean-up of even the extremely fine particles is effected.

Result

—by combining advantages of both mechanical and electrical recovery methods into one compact coordinated installation, very high recovery efficiencies are obtained at low installation and operating costs. And the CMP has the further advantage that overall efficiency remains uniformly high regardless of boiler loads—an important advantage not found in other types of recovery equipment.

Western Precipitation offers—in ONE experienced organization—years of progressive "Know-How" in all three basic types of recovery equipment . . . *electrical* (COTTRELL), *mechanical* (MULTICLONE) and *filter* (DUALAIRE). Not only does this assure you an unbiased recommendation on the type best suited to your particular requirements, but also assures maximum performance when integrating two types of equipment into one overall system.

We are equipped to handle complete "turnkey" installations—or any phase of a dust, fume or fly ash control problem. Throughout major industrial areas of the United States and Canada, we are as close as your telephone. May we serve you?

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Reverse-Jet Filters
HOLO-FLITE Processors

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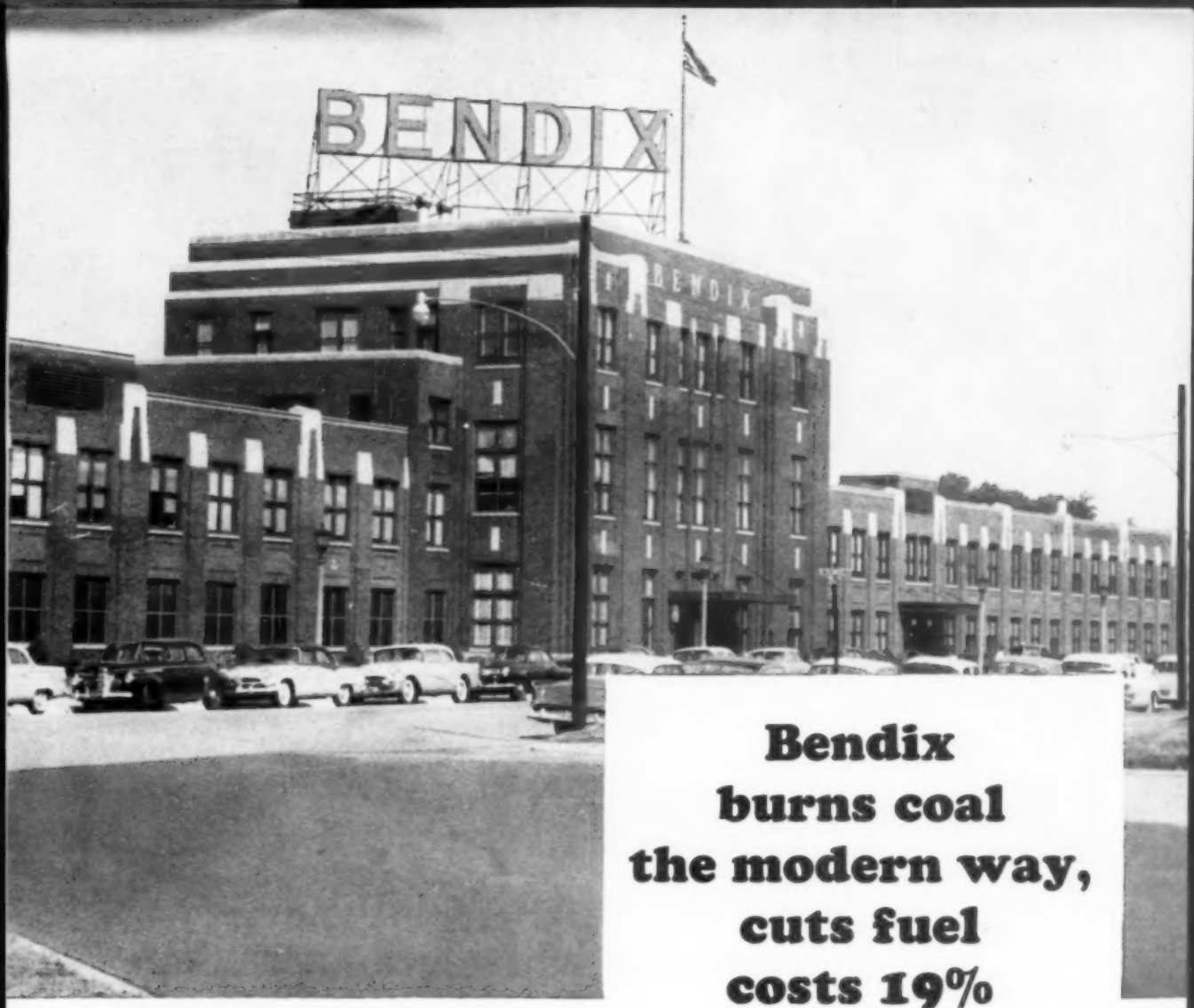


Bendix burns coal the modern way, cuts fuel costs 19%

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

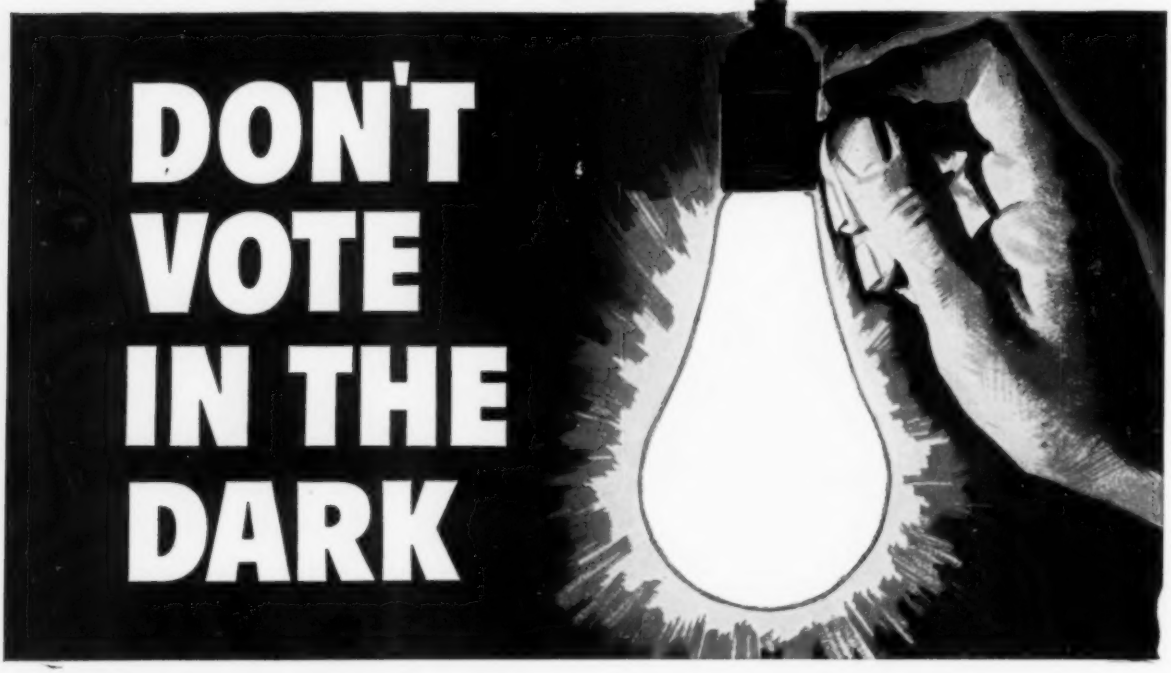
At its Products Division, South Bend, Ind., Bendix Aviation Corporation undertook extensive modernization of its power system. The firm replaced two 511 HP boilers with two 80,000 lb./hr. spreader stoker fired units. A 500-ton overhead bunker and coal elevator-conveyor system were installed. Additional changes were made including an increase in the capacities of the water and air systems.

Today fuel costs at Bendix have been cut 19%, efficiency boosted from 70% to 82%, maintenance costs lowered 80% and availability upped from 50% to 96%. By burning coal the modern way, Bendix is saving many thousands of dollars yearly and will amortize the cost of modernization in a comparatively short time.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

BITUMINOUS COAL INSTITUTE
Southern Building • Washington 5, D. C.

VOTE + but



Study the issues and the candidates— and then decide where you stand

You wouldn't buy a new car without at least driving it around the block.

You wouldn't buy a new house without checking up on the neighborhood, the schools, and any back taxes.

So vote—but don't vote in the dark in this exciting election year.

Listen to what candidates are saying on TV and radio.

Read your newspapers—especially the political news and editorial page.

Talk things out with your neighbors over the back fence and at the filling station on the corner. Take part in the discussion group at your church, club, lodge, or school.

Think about the issues and the candidates—and then make up your own mind. Remember, nobody is in that voting booth but you and your conscience. Step behind that curtain with pride on election day. Then vote as a free American.

VOTER'S CHECKLIST

1. **Be sure you're registered.**
2. **Study the issues and candidates.** Go to rallies. Ask questions. Read the papers. Listen to speeches.
3. **Mark up a sample ballot** in advance. (They are published in the papers.)
4. **Join your neighbors at the polls on Election Day November 6th.**

Is your name in the book?

You can't vote if you're not registered. You lock yourself out of the polls, unless you're a registered voter. And you and only you can get your name in the Registration Book. When they call the roll on election day, will you be there? Do you know anyone who won't?

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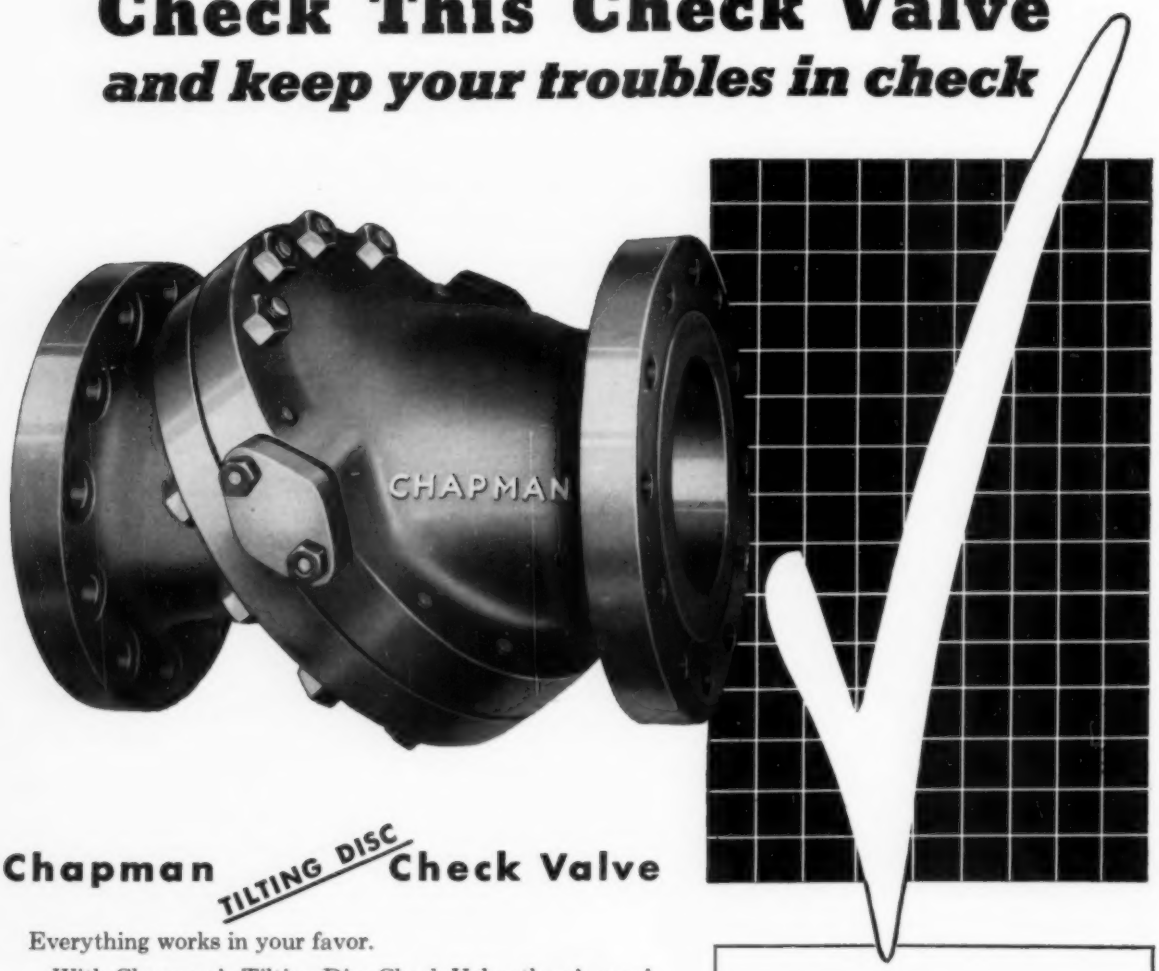


Chapman TILTING DISC Check Valve

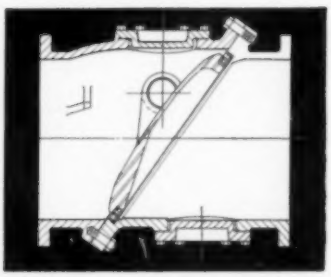
Everything works in your favor.

With Chapman's Tilting Disc Check Valve there's no vibration, no fluttering, no noise. There's no slamming, with usual piping arrangements, no banging to cause damage to system or valve. There's no grinding, scraping or wearing to either the disc or seat.

All of this means less headaches to you . . . both physical and financial headaches. The smooth, sure, quiet action means less, much less, maintenance over the longest period under toughest operating conditions.

Chapman Tilting Disc Check Valves with money-saving advantages like these are available in iron and steel, with standard end to end, for handling fluids or gases under a wide range of pressures. They're listed and shown in our Catalog 30-A. Send for it and check the valves you need for replacement or new piping systems, right now.

The CHAPMAN Valve Mfg. Co.
INDIAN ORCHARD, MASSACHUSETTS



The Valve That Goes with the Flow

Here's the idea in back of it all. When the flow is on, "airfoil" disc is held firmly against stops in the body. When the flow drops, disc balances itself quietly on whatever flow there is. When the flow stops, disc drops quickly and tightly on special bevel seat. It's as simple as that. It's as sound as that. And valve men will be pleased when they see that enough room is given around disc to cut down flow resistance.

TIMELY COMMENTS

SOUTHERN POWER AND INDUSTRY

Improved Power Cables

THE TREND toward the use of alloy lead sheaths for power cables has increased steadily since their introduction 40 years ago. The addition of small amounts of arsenic, tin, bismuth and tellurium greatly improve the creep and fatigue resistance of lead.

Field experience with hundreds of thousands of feet of **tellurium alloy lead sheathed electric cables,** was recently reported at the A.I.E.E. Fall General Meeting by H. A. Hoover, research engineer for John A. Roebling's Sons Corporation. He told that the tellurium lead alloy has excellent resistance to creep and bending fatigue; that it may be extruded over a wide range of temperatures without affecting its properties; and that it shows only a slight age hardening trend after prolonged aging at room temperature. Variation in quenching temperature from 300 F down to air cooling has little effect on its high resistance to creep and bending fatigue, and it has some superiority to copper bearing lead under conditions of electrolytic and direct chemical attack.

Indium Bearing Solders

SOFT SOLDERS bearing the metal indium, in combination with tin, lead, and silver, are softer than lead, more lustrous than silver and as untarnishable as gold. Alpha Metals, Inc. reports that when used as a component of solder, indium makes the solder **harder and stronger,** and it becomes **more resistant to corrosion.** The corrosion resistance is particularly increased in connection with attack by lye and other alkalis. Increased wetting power is also observed when indium is present in solder.

With varying amounts of indium, the properties of solder will also vary. Solder which is richer in indium has a higher bonding-holding strength, while the lower indium content solder is harder, higher melting, and has better electrical conductivity and tensile strength.

Indium-containing solders are applied in exactly the same way as the regular sweating type 50 tin/50 lead solders. No special equipment is required for their use. Electrical junctions, transistor electrodes, and mirror mountings are only three of the many areas where these alloys have been successfully applied.

Silicone Insulation on Direct Current Motors

INCREASING use of silicone insulation on direct-current motors and generators has created considerable interest throughout industry. Class H insulation has extended the temperature limits of the insulation hot-spot from the 130 C of Class B to a maximum of 180 C. National Carbon Company engineers state that extended use of silicones brought with it problems totally unrelated to temperatures—problems in connection with the operation of electrical machinery in an enclosed atmosphere of silicone vapors.

Brushes especially processed to meet the operating requirements of silicone-insulated machines were introduced by National Carbon Company in ample time to go into service as initial equipment last year, and experience has proved their acceptability in this rough service.

According to National Carbon's brush engineers, the operation of ordinary carbon brushes in silicone atmosphere is accompanied by two important phenomena: **(1) rapid brush wear,** and **(2) fluctuating** and, at times, **very high contact drop.** On commutating machines, periodic brush sparking results from unbalanced contact drop and the large amount of carbon dust between the brush and commutator.

The rapid brush wear is caused by the decomposition of the adsorbed silicone vapors on the commutator and brush surfaces, forming abrasive silica. The specially processed "National" brushes, known as Grades N-2 and N-6, not only operate with a minimum of wear, but with more normal contact drop.

The fumes from silicone-insulated windings, it has been found, are produced at a variable rate, depending on the type of varnish used, and the baking temperature and curing cycle. The emission of fumes does not seem to affect adversely the hydrophobic and insulating properties of the silicone varnish.

The rate of emission decreases with time, but under extremely high-temperature operation, increases suddenly and then slowly drops back to the original value. In other words, even after considerable operation of a silicone-insulated machine, the rate of emission of silicone vapors can suddenly increase, without affecting the insulation qualities.

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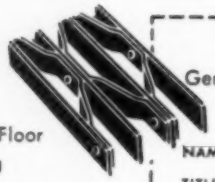
IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** – engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** – reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** – approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** – creates greater safety, economy of maintenance, no sweeping or washing required.



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SOUTHERN PLANT—LEEDS, ALA — MAIN PLANT—UNION, N. J.

BORDEN METAL PRODUCTS CO.

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INDUSTRY SPEAKS

Atomic Topics

by JOHN F. LEE
Professor of Mechanical Engineering
North Carolina State College
Raleigh, North Carolina

NUCLEAR energy has achieved such importance that it has an impact on the activities of our own and foreign governments. Various countries are entering into pacts for the peaceful developments of atomic energy.

In this country there has been an unprecedented surge of activity in the development of private atomic energy industries and vociferous demands for government support for a variety of atomic projects.

Competitive Status — There are many conflicting reports about the competitive status of atomic energy compared with conventional power. At the World Power Conference, a British atomic energy authority stated flatly that atomic power is now competitive with coal in Britain. In fact, he said that atomic power plants in Britain are producing twice as much energy per dollar as conventional power plants. Of course, the price of coal is exhorbitantly high in the British Isles and what is competitive with coal there is not necessarily competitive elsewhere.

Dr. V. M. Staebler of the U. S. Atomic Energy Commission has made a more reasonable statement. He said that present experimental results obtained in the United States give cause for considerable optimism that atomic power eventually will be competitive with conventional power.

New Fuel Source — Thorium is a potentially important nuclear fuel which although not fissionable in its natural state can be converted to fissionable Uranium-233 under radiation in a nuclear reactor. It is generally conceded that thorium will share honors with Uranium-235 as a major nucler fuel and some experts predict it will eventually replace the less abundant supplies of Uranium-235. The construction of nuclear power plants utilizing thorium is scheduled.

Utilities Plan Future — Smarting under attacks made on private atomic power programs and the implications of the Gore bill for federally sponsored atomic power plants, privately-owned power companies have set up a task force to push atomic power.

The task force is composed of executives of member companies, equipment manufacturers and independent nuclear engineers and scientists. The duty of the task force is to review various kinds of reactors and atomic power plant designs which could be considered for further development by member companies.

Plan Defeated — Congress has defeated a proposed program for government sponsorship of atomic power plants which would have cost about $400,000,000. Proponents of the program had attacked the slowness of private industry in developing and building atomic power plants in this country.

There was considerable concern over the belief that we are losing the race for kilowatts to Britain and Russia. Opponents of the program pointed out that we are ahead in nuclear technology and there is little to be gained from a crash program which promotes construction of a number of power plants based on premature power reactor development.

Merchant Ship — Congress has authorized the construction of an atomic-powered freighter at a cost of about $40,000,000. This will be the first commercial vessel to be powered by atomic energy and is expected to spur the private construction of a fleet of high-speed tankers and freighters.

Power Pools — The French Assembly has ratified a treaty which permits its membership in a six-nation atomic energy community in Europe, and President Eisenhower has proposed the formation of a special commission for joint atomic energy development in the Western Hemisphere. The president's proposal was enthusiastically received. The Pan-American Commission will be devoted to the development and advancement of peaceful uses of atomic energy. The Commission will not be a supernational body but a cooperative venture by member nations in this hemisphere.

Tennessee Plant Employs New Fabrication Procedures to Construct

Nuclear Power Reactor Vessel

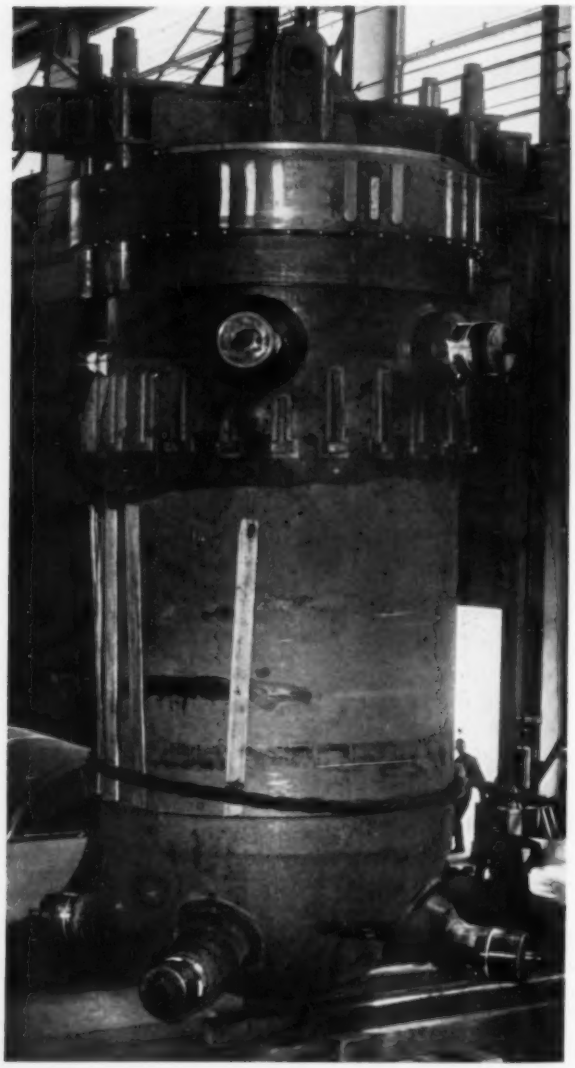
THE HEAVIEST single component for America's first full-scale commercial nuclear power plant, the shell of the 235-ton reactor vessel, was shipped from the Chattanooga, Tenn., plant of Combustion Engineering, Inc., on September 25.

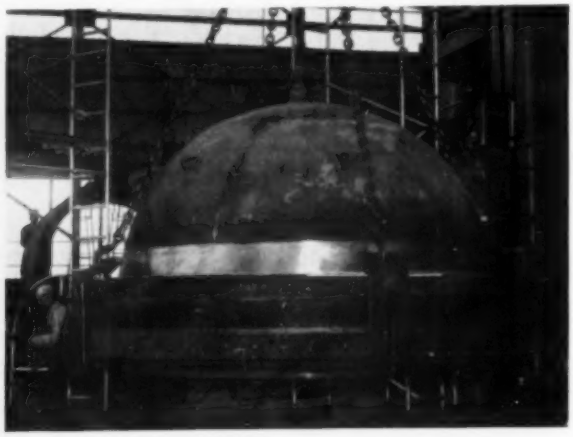
On hand to inspect Combustion's new facilities for the manufacture of heavy nuclear components and to witness the loading of the heavy vessel were representatives of the Atomic Energy Commission, government officials and many utility and business executives.

The reactor vessel will be installed at Shippingport, Penna., in an electric generating plant which Westinghouse Electric Corporation is designing under contract with the Atomic Energy Commission for operation by Duquesne Light Company.

The vessel was built by assembling sections of the heaviest clad plate ever rolled by Lukens Steel Company and by developing special welding, machining and heat-treating techniques at the Chattanooga shops of Combustion.

Initial net electrical output of the Shippingport Power Plant will





be 60,000 kw, but a 60,000 kw turbine-generator will be installed in anticipation of greater nuclear capacity.

Design Problems

The problems involved in the design, development, and manufacture of the reactor vessel were formidable, and were solved by close coordination between Combustion, Westinghouse and A. E. C. engineers. Numerous problems in the design required reliance on fundamental theory because conventional formulas for determining stresses and thicknesses were not applicable to wall thicknesses involved.

In addition to pressure and thermal stresses due to start-up conditions, consideration had to be given to heat generation in the vessel wall resulting from neutron and gamma ray flux emanating from the nuclear fission process. As a result of the design, development, and manufacturing experience on the reactor vessel, it is anticipated that new criteria and new formulas will be standardized.

The view at left shows the reactor vessel designed and built by Combustion Engineering, Inc. at Chattanooga, Tennessee for America's first full-scale commercial power plant. The head for the vessel is shown at upper right. Each of the bolts that hold head to vessel weighs 700 pounds, including nuts.

Description

The reactor vessel is designed to withstand a 2500-psig internal pressure at 600 F. At rated load 26 million lb of primary coolant water will enter the vessel each hour through four inlet nozzles and pass through the core where the temperature will be raised from 507 F to 542 F. Dry weight of the vessel is 235 tons, of which the shell portion weighs 150 tons and the removable top head 85 tons. In addition the vessel will contain thermal shields, a core assembly and other equipment having a total weight of an additional 100 tons. The interior diameter is 9 ft-1 in. and the length from the inside of the lower head to the inside of the top head is 31 ft-3 in.

The top head is fastened to the shell section by means of 42, 6-in. diameter studs, 80-½ in. long. Each stud with its accompanying nuts weighs 700 lb.

To secure the head to the vessel shell, these studs are elongated by heat supplied from electric heaters extending into the center of the studs so that the nuts can be turned through a predetermined angle to induce the required stud tension. The stud tension required to maintain contact of the mating surfaces of the head and shell under design conditions is 40,000 psi. Removability of the head is a design requirement to enable servicing of the internals of the vessel.

Since the hot primary coolant water circulated through the reactor vessel is corrosive, the internal portions of the vessel are clad with a ¼-in. corrosion-resistant stainless steel. The hemispherical bottom head and shell courses were fabricated from manganese-molybdenum (stainless clad) plate having 6-in. and 8⅝-in. minimum thicknesses respectively. These integrally clad plates were fabricated by Lukens Steel Company.

The massive flange forgings, and the 10-in. thick hemispherical portions of the removable head could not be procured with the stainless steel integrally clad. In order to clad these thicker sections, a special device for cladding the base metal by weld deposit was developed at the Chattanooga shops.

Neutron and gamma radiation, if not reduced in intensity at the vessel shell, would generate heat in the shell inducing thermal gradients which would cause extremely high shell stresses. Thermal shields which surround the core assembly reduce the gamma ray intensity at the shell to a safe level. To remove the heat generated in the shields, 15% of the primary coolant flow is directed up along the shields and vessel walls prior to passing through the core. The flow baffle attached to the lower portion of the shields distributes the flow evenly across the diameter of the core.

Thermal Expansion

The function of the core held-down barrel is to keep the core basket at a predetermined elevation. Due to the difference in thermal expansion of the vessel internals and the vessel wall, a link between the core basket and the core ledge had to be designed to assure that the internals could expand and contract without being highly stressed and without allowing the core basket to float. The spring housing assembly containing 60 springs serves this function. The springs are made of ⅞-in. diam rounds of Inconel "X" material. The spring has a mean coil diameter of 3 7/16-in. and has a free height of 18⅝-in.

The removable head has its hemispherical portion penetrated with 46 openings in which are attached housings which allow entrance of fuel handling equipment for removing spent fuel elements, instrumentation leads and control rods to control the core reactivity. The alignment of the control rods over a distance of 18 ft from the top of the head housing to the core assembly must be carefully controlled.

Close Tolerances

Control of the core activity depends on the operation of the control rods. To assure proper functioning of these rods, the overall alignment from the top of the control rod housings to the core assembly was held to less than 0.011 in. per foot. Alignment jigs attached to three points on the shell flange will guide the head to its proper location during installation.

The entire vessel will be supported by 24 brackets located three feet below the centerline of the outlet nozzles. These brackets will

support a total operating weight of approximately 385 tons.

Material

The base material is manganese-molybdenum steel, meeting the requirements of the ASME Material Specification SA-302, Grade B, which calls for a minimum tensile strength of 80,000 psi. The specified composition is manganese 1.10 to 1.50, molybdenum 0.40 to 0.60, and carbon 0.27 Max. The stainless cladding is AISI Type 304-L, 18 per cent chromium, 8 per cent nickel with a maximum specified carbon of 0.03 per cent.

The bond between the cladding and base metal must be sufficient to meet the shear test requirements under ASME Specifications SA-264 and the continuity of bond was assured by ultrasonic reflectoscope inspection. The quality of the plate as regards inclusions and soundness, was also checked by this method.

YOU CAN SAVE MONEY with materials handling equipment. Eleven Southern plants show how they did it. See Pages 51-58.

IDEAS & METHODS — Twenty-nine cost-cutting materials handling equipment bulletins are briefed on Pages 60-62.

Fabrication

The parts making up the vessel were the biggest and heaviest of their kind ever made. Procurement of the very thick clad plates with an integral bond between the clad and backing presented a problem. This was the largest plate of this type ever rolled by Lukens Steel Company. The plate, after being rolled, was examined over every square inch of its surface by the ultrasonic method of inspection.

The flanges and heads presented difficult alloy-forging problems, which were solved by Bethlehem Steel Company. These are the largest manganese - molybdenum steel forgings ever made. Forming the shell employed the maximum 6000-ton capacity of the Combustion Engineering hydraulic press. Plates formed were, in all cases, heated to elevated temperatures, and special precautions were observed to maintain metallurgical and physical properties.

After forming the parts, mating edges were machined to provide welding grooves to allow joining parts in order to make a large assembly. All of the welding operations were required to be performed while the parts were kept hot thereby increasing the difficulties of fabrication. Welding through the thicknesses involved (up to 10-in. thick) required very close control of the welding technique to insure the highest quality of the end product.

Radiographing of the welds joining the various parts was performed on the fifteen million-volt betatron. This machine is so sensitive it will readily detect a defect that is no larger than a ⅛-in. length of a toothpick in the weld deposit in a 10-in. thick piece of material.

Heat treatment of all welds was done in large heat-treating furnaces at elevated temperatures to relieve the stresses in the material. On some parts the accumulated heat-treating time over the fabrication processes amounted to about sixty days.

All clad surfaces were inspected with a dye penetrant fluid to insure against any minute flaws, and backing plate surfaces were inspected with a magnetic particle test.

The machining was accomplished on large and special equipment designed primarily for this type product. The final machining operation required approximately sixty days on one of the world's largest boring mills. The machining operation was performed using optical methods to align various matching machined surfaces.

The great weight of the vessel, without the head (150 tons), caused constant settling of the setup, even though a tremendous slab of reinforced concrete supported the face plate. In addition, temperature variations from day to night caused "crawling" and required periodic checking and realignment. Even the precision measuring equipment on the boring mill itself had to be checked periodically.

The overall fabrication time was about sixteen months. Much of the work progressed seven days a week, twenty-four hours a day, with time out only for special holidays. Very close planning and coordination of operations were required to maintain required progress.

Heavy Facilities

Because of the exceptional weight, large physical dimensions and accuracy of machining, many new facilities had to be installed by the Chattanooga Division. A special bay, 80 ft wide and 360 ft long, was built to handle heavy components for nuclear work. This new bay is equipped with a 250-ton crane located 62 ft above the floor and another 75-ton crane on a lower level. An extension to this bay 170 ft in length is now being constructed.

Shell plates were formed under a 6,000-ton hydraulic press and the "orange peel" segments for the head were formed under a 2,000-ton, four-post press. Larger welding machines for seam welds had to be engineered and built by Combustion. The know-how of metallurgists, welding specialists, and engineers was pooled into the development of equipment to apply stainless steel cladding to plate surfaces and flanges used in this work. These efforts resulted in improved and more effective methods for producing quality cladding.

A new gas or oil fired, 250-ton capacity, car type furnace for heat-treating vessels up to 19 ft in diameter and 58 ft in length was engineered and built at the Chattanooga plant. Elaborate control apparatus maintains exact temperatures up to 2150 F. Alongside this furnace a 250-ton, car type sandblast unit was installed

that is capable of cleaning these larger components.

Final machining was done on a 7-in. Gray horizontal boring and milling machine. This tool permits a wide range of operations, such as boring, facing, turning, milling, and drilling without having to reposition heavy and unwieldy work pieces. The machine was furnished with a special boring and facing head for turning and facing large diameters. In addition, a number of accessories were designed and built by Combustion to supplement the many intricate functions of the machine.

However, no matter how much care had been taken in the selection of the massive precision tool, the final machining tolerances could not have been maintained by virtue of the machine's precision alone. The relationship of the vessel to the machine tool was found to vary slightly due to the great weight of the work piece and changes in room temperature.

The concentricity of the large bores, squareness of the center axis with flange face, and the relative location of keys within and without the vessel could not have been readily established with standard methods of measurement. The employment of optical tooling techniques solved the problem, for then it was possible to observe and control the work in progress at all times.

Vessel Testing

A full diameter test vessel was constructed and will be subjected to a series of tests to further substantiate the design calculations. Thermal cycling tests will be performed to establish rates of start up and shut down and to establish other basic information concerning the thermal response of the shell. Additional problems such as housing alignment will also be studied on this full diameter test vessel.

Shipment

The great weight and size of the reactor vessel was a source of many problems in finding a suitable way to ship it from Chattanooga to Shippingport. Originally it was contemplated that it would be transported by barge, but limitations in the capacity of floating cranes in the Pittsburgh area prevented use of this means of transportation.

The vessel was transported by a special, 24-wheel flat car designed for a load of 250 tons. During the trip special speed limits of 25 mph applied and it was necessary to move the vessel on a special train with all adjacent tracks cleared of cars.

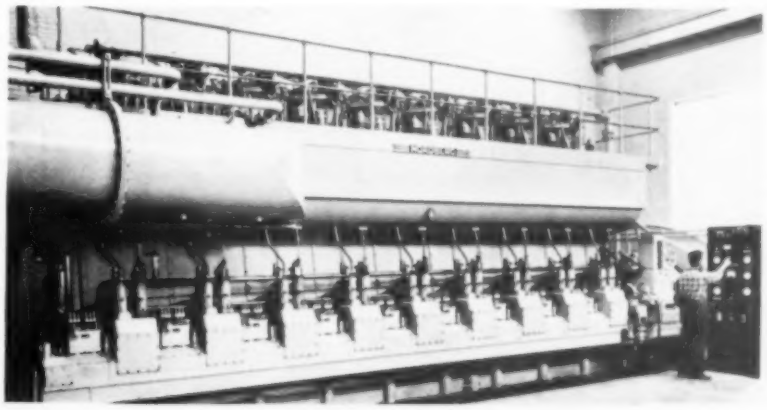
Dual-Fuel Pays Off for Municipal Plant

CONVERSION to dual-fuel operation is writing a new chapter in the history of municipal power at Opelousas, La. Since the conversion began at this plant in August, 1950, fuel costs have been cut from an average of 9.05 mills per kwh to 3.21 mills per kwh, a reduction of more than 64%.

This improvement is wholly attributed by the plant superintendent to two new Nordberg Duafuel engines and to two 1000 hp Busch-Sulzer diesels which were converted to dual fuel by the Busch-Sulzer Division of Nordberg in February, 1950. These four engines carry the plant's full load, with the exception of some peaking handled by three older straight oil engines. The first Nordberg placed on the line in August, 1950 was a 7-cylinder, 21½" bore by 29" stroke Duafuel unit, rated 2800 hp. The second Nordberg went into service in September, 1955 and is a 9-cylinder, 21½" bore by 31" stroke Duafuel unit, rated 4030 hp.

Since 1950, the Opelousas plant purchased upwards of 2,000,000 kwh per year from a local public utility in order to meet a rising demand. The average price paid for this power, delivered at the switchboard, is 9.7 mills per kwh. It is expected that the addition of the 4030 hp Nordberg Duafuel engine, in addition to restoring firm capacity at the plant, will make it unnecessary to purchase power during the peak load period of 1956 and will result in proportionately greater savings.

Principal reason for the greatly increased demand for power is the increased use of air conditioning throughout Opelousas. Virtually every business establishment in town is air conditioned and more and more residences are installing units. To meet these demands, the Electric Light and Water Works Department undertook a well planned expansion and improvement program, designed to cut operating costs. The improvement introduced by the dual-fuel engines show that a relatively small, efficiently operated municipal plant can produce dependable power at low cost.



Firm capacity was restored to the Opelousas plant with the installation of this nine cylinder Nordberg Duafuel engine. Rated 4030 hp at 225 rpm, the big Nordberg engine is direct-connected to a 3575 kva General Electric generator.

Orifices Cut Pressure Drop and Reduce Valve Maintenance

Control of Spray Water to Reheater Attemperators

By I. J. KARASSIK
Consulting Engineer
Worthington Corporation

ONE OF THE problems introduced by the growing use of the reheat cycle is that of temperature control of the reheated steam. While the reheater has improved markedly the heat rate of the modern high pressure steam generating station, very close regulation of the reheat temperature is necessary not only to retain this improvement, but also to protect the reheater against failures from over-heating and to protect the turbine against clearance difficulties caused by excessive thermal expansion.

The major cause for reheat temperature variation is the variation in the load carried by the main unit. If a convection reheater is used, the reheat temperature increases with the load, because the effect of increased furnace exit temperature and gas flow is to increase heat absorption by convection more rapidly than the steam flow through the reheater. This effect, incidentally, is the same as in the case of the primary steam superheater, and the means used to correct this increase in temperature which follows increase in load is the same for both.

The particular method of control which interests us at present is the use of spray attemperation. Water is introduced in controlled quantities into the reheat steam line through a spray nozzle at the throat of a venturi section within the line. This water vaporizes very rapidly, mixing with the reheated steam and cooling it to the required temperature.

The amount of water required for attemperation varies with each installation. As an example, Fig. 1 shows the requirements for a 156,000 kw unit, designed for 1800 psi throttle pressure. It will be noted that no spray water is required for steam flows under 400,000 lb/hr and that the requirement increases with steam flow until it reaches 80,000 lb/hr at a steam flow to the boiler at 1,080,000 lb/hr.

Source of Spray-Water

The spray-water must be of the highest possible purity, as any solids entrained in this water would enter the turbine and might cause undesirable deposits on the turbine blading. An excellent source of such water would be the drains from high pressure heaters. This would, however, require the use of a very special type of pump and disposal of drains at loads when no spray water is required might complicate the controls to some extent. As a result, the preferred source of spray water is the feedwater handled by the boiler feed pumps, provided the total solids are kept below 2 to 3 ppm concentration.

In most installations where the spray water is taken from the boiler feed pump discharge, automatic control of the injected flow is provided by means of a two- or three-element control. In the first, either steam or air flow sets the initial adjustments of a throttling valve in the spray line. The final or trimming adjustment is made from the final reheat steam

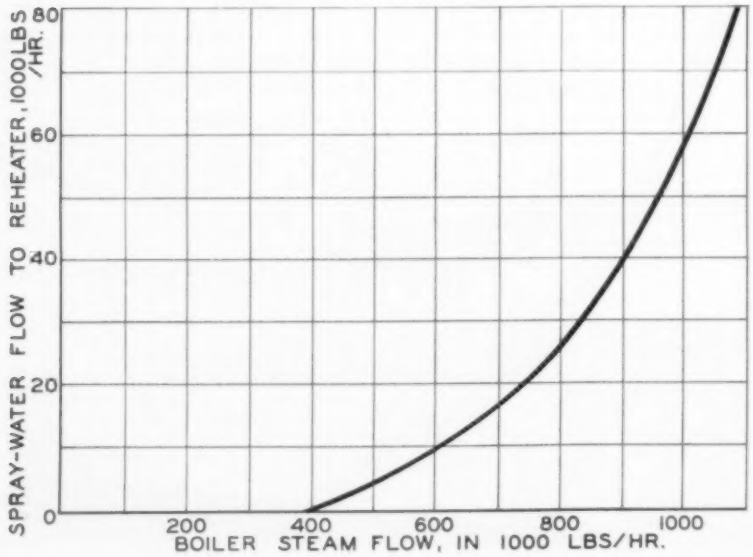


Fig. 1—Relationship between reheater spray-water and total boiler steam flow

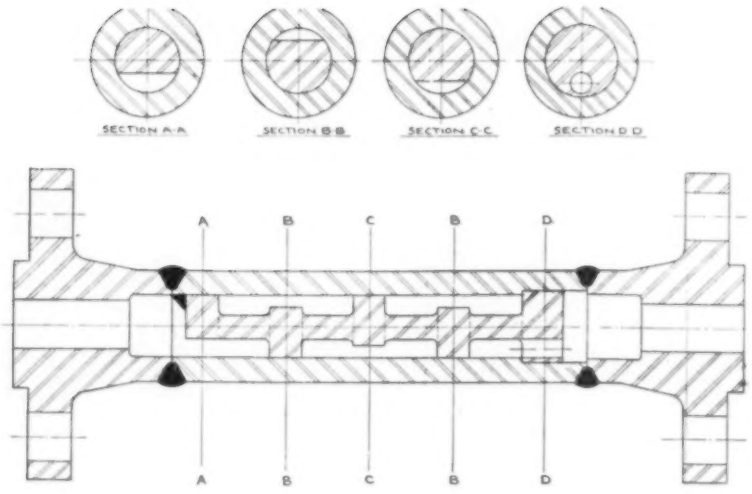


Fig. 2—One inch multiple pressure reducing orifice

temperature. In the three-element control, the initial adjustment is provided by a relay responsive to the ratio between steam flow and spray-water flow, while the final adjustment is again made from the reheat steam temperature.

Whatever the means applied to control the quantity of spray-water, we are still faced by the serious problems of throttling a very large pressure in the regulating valve. At the maximum load, the reheat pressure may be of the order of 450 psig, but at the load of zero spray-water injection, this pressure may be down to 200 psig. On the other hand, the discharge pressure at the boiler feed pump might be 2450 psig at full load and as high as 2850 psig at the minimum flow condition. As a result, the regulating valve may be required to throttle from 2000 psi to as much as 2650 psi. It is not surprising that the life of such valves is quite short and maintenance costs high.

A solution to this problem has been searched for in several different directions. In some cases, consideration has been given to the use of a separate spray-water pump which would take its suction from the deaerating heater in open cycles or from the condensate pump discharge in closed cycles. In other installations, the required amount of water has been diverted from an intermediate stage of the boiler feed pump, so as to provide a source of spray-water at moderate pressures, thus reducing the amount of throttling to be done by the regulating valve.

Suggested Method

There is one method which promises to reduce valve maintenance without the necessity of a separate pump or the need of modifying the boiler feed pump construction. The method is based on the principle that breaking down a high pressure differential in a series of orifices is conducive to considerably less wear than if this pressure differential is broken down through a single valve.

Such multiple pressure reducing orifices are well known in their application to recirculation by-pass protection of boiler feed pumps against overheating at light flows. In that application, such an orifice

(*Continued on Page* 62)

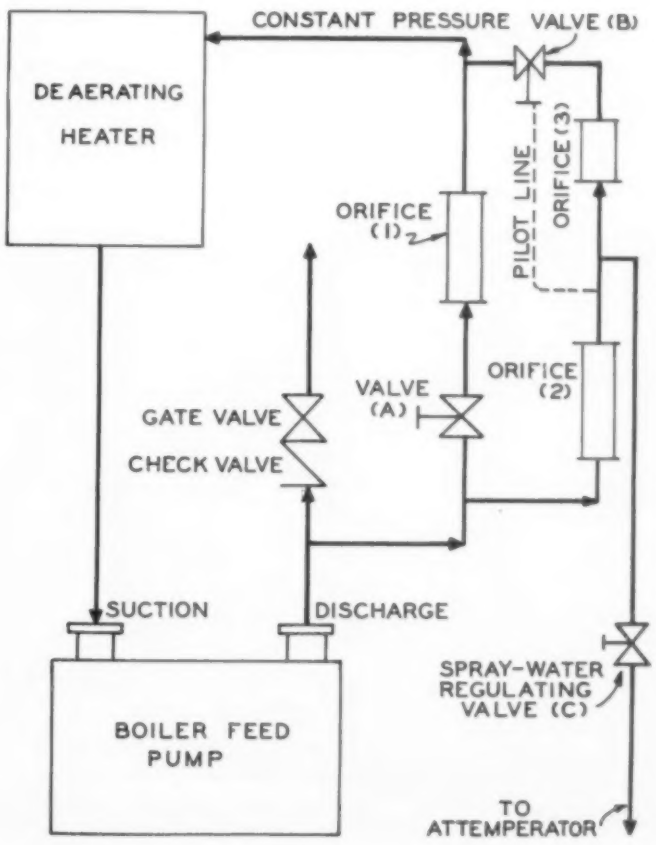


Fig. 3—Orifice and valve arrangement for spray-water control at reheater attemperator.

High Humidity Without Condensation

TYPICAL of what has been accomplished in industrial weather control is exemplified at the Clinton Cotton Mills at Clinton, South Carolina, where a new weave room with some 1,300 looms was placed in production.

Optimum operating efficiencies can be obtained in a cotton weave room if the temperature can be maintained between 80 and 85 F, with the relative humidity maintained at a pre-determined percentage ranging between 80 and 85.

Clinton Mills' 1,300 looms in the new plant area have a rated capacity of 165 and 185 picks per minute. Operating schedules are on a 24-hour day, six-day week. Proper control of humidity and temperature aid in holding the breakage of threads (with resultant loom stop) to a minimum. The quality of the fabric and the mechanical operation of the looms are also benefited.

Insulating Material

One problem that arises from the maintenance of this high humidity is the possibility of damaging condensation on the walls and ceilings of the weave room. To overcome this, the new weave room, a one-story addition to the company's original thick-walled multi-story plant, is constructed with walls consisting of a two-inch layer of cellular glass insulation installed between the outside face brick and a glazed tile interior wall. This Foamglas insulating material, produced by Pittsburgh Corning Corporation, is also used on the roof. Two-inch-thick blocks are laid in hot asphalt over a three-inch wood deck and covered with a four-ply built-up roof covered with gravel.

J. B. Templeton, vice president in charge of manufacturing at the Clinton Mills, says this cellular glass insulating material provides a moisture-vapor barrier on walls and roof of the weave room. This insulation, coupled with the operation of four evaporative cooling systems which have been installed in four roof penthouses, makes it possible, Mr. Templeton said, to tailor the plant air to optimum weave room conditions.

The four evaporative cooling units, each with a capacity of 80,000 cfm, are designed to handle a calculated heat load of 5,000,000 Btu per hour.

Throughout the weave room's 121,000 sq ft of production area, the temperature shows little variance from 80 to 85 degree range and relative humidity is held at an almost constant 80%.

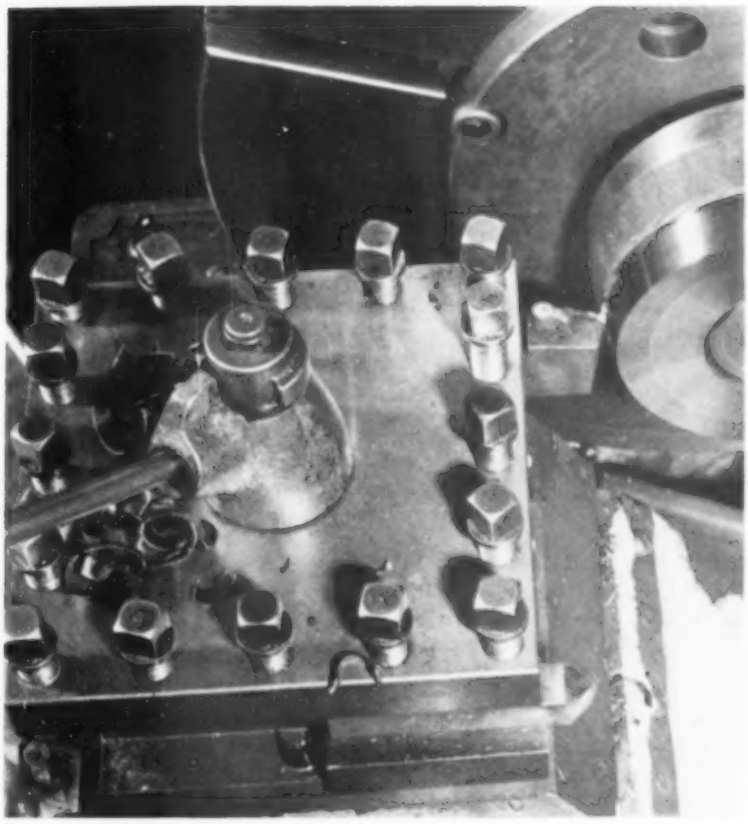
Foamglas was selected as the insulating material for the new weave room, Templeton said, because of its unique physical properties. Completely inorganic, and with a closed cell structure, the Foamglas is waterproof and vaporproof. It cannot absorb moisture, which impairs the insulating efficiency of many insulating materials and in addition is fireproof, rot-proof and vermin-proof.

Being waterproof and vaporproof, the material has a constant insulating value, a factor taken into serious consideration in the determining of the size and capacities of the air-conditioning units.

Two-inch-thick Foamglas blocks insulate the roof of the Clinton Cotton Mills in South Carolina. Foamglas, weighing only 9 lb per cu ft, is waterproof, vaporproof, fireproof and vermin-proof.

"Throw-Away" Insert Tooling Cuts Costs

In this Chattanooga plant, machining costs for 7-in. diameter tapered steel rollers were cut to 1/10 former tool costs by use of Kendex "throw-away" insert tooling in place of standard brazed carbide tools. Kendex turning and facing tools are on opposite corners of the square turret.



TOOL COSTS have been reduced to about one-tenth of former costs in the machining of 7-in. diameter forged steel tapered rollers by the Koehring Southern Company, Chattanooga, Tenn., and machining time cut to less than one-third of the time formerly required. The tool saving, which amounts to $11.70 per 100 rollers, was achieved by a change in the type of carbide tools and does not include additional savings that are realized from the increased production rate and elimination of tool regrinding costs.

Tooling Method

Use of Kendex tooling with square "throw-away" button inserts having eight cutting edges gave these advantages over standard style GR and GL brazed tip carbide tools. The Kendex clamped insert tooling made by Kennametal Inc. permitted an increase in machining speed from 353 to 620 SFM with feeds stepped up from 0.012 in. to 0.016 in. for turning and from 0.006 in. to 0.020 in. for facing. Depths of cut were the same as before, ⅛ in. for turning and ¼ in. for facing. As a result the machining time was cut from 2.69 minutes to 0.73 minutes per piece, or about 73 per cent.

The machining operation consists of turning a 7° 40-ft taper on a 2.75-in. long forged roller surface which is 6¼ in. in diameter on one end and 7 in. in diameter on the other end, and facing the smaller side. SAE 1045 steel of 240-270 Brinell hardness is used in the roller. Machining is done on a Warner & Swasey No. 3 lathe with Kendex Style KSBR-85 for turning and KSBL-85 for facing, using Grade K4H inserts.

Benefits

Insert life is 58 pieces per cutting point on the turning operation and 80 pieces on facing. Since eight cutting edges are available on each square insert, the total insert life is 464 on the turning operations and 640 for the facing operations. With brazed tip tungsten carbide tools the average number of pieces per tool grind was 10.3 turned and 7 faced. With ten grinds available, the total tool life was 103 for turning and 70 for facing.

Tool Cost Cut

The former tool cost per piece, based on a brazed tool cost of $5.42 each, was 13 cents: 5.26 cents for turning and 7.74 cents for facing. With Kendex square "turn-over" button inserts costing $2.47 plus $1.15 (the prorated holder charge based on 1/10 of the tool holder price) or $3.62, the tool cost per piece is 1.3 cents: 0.78 cents for turning and 0.56 cents for facing. The resultant machining cost was, therefore, reduced from $13 to $1.30 per 100 pieces. Further savings are derived from faster production and elimination of tool regrinding.

Check List of Application Considerations

Which Blower Do You Need?

- ***First Cost***
- ***Maintenance***
- ***Noise Factor***
- ***Cleanliness***
- ***Size and Weight***

By ROBERT STEPHENS
Engineer in charge of the
Allen Billmyre Division,
Lamson Corporation

BLOWERS are such an integral part of a plant that an unbiased discussion of "for and against" each type might be helpful to the engineer who must select a unit for a specific application.

There are many designs of air and gas blowers and compressors which can be used to create differential pressures, and there are many overlapping areas within, as well as between, designs. This overlap makes it difficult to set down well defined service boundaries and, of course, furnishes material for endless arguments.

We shall try to discuss the major classifications, and to point out some of the advantages and disadvantages of each—not with the idea of furnishing the engineer with a one page solution to blower problems, but with the hope that we may point out important avenues to explore when selecting a unit.

COMPARATIVE CHARACTERISTICS:

	1. Rotary Sliding Vane	2. Rotary Two Impeller	3. Reciprocating Piston	4. Two Impeller—Helical	5. Liquid Piston	6. Axial Flow Compressor	7. Centrifugal Blower
1. High Pressure Obtainable	X	X	X	X	X	X	
2. Low Volume	X		X	X	X		
3. Ability to Build Up Pressure Against Stoppage	X	X	X	X	X		
4. High Volume						X	X
5. Non-Pulsating Air Flow				X	X	X	X
6. Perfectly Clean Air—No Possible Contamination						X	X
7. Constant Pressure Over Wide Volume Range							X
8. H.P. Input Proportional to Air Volume Used							X
9. Pulsating Air Flow	X	X	X				
10. Noise	X	X	X	X			
11. Possible Contamination (Lubrication Required)	X		X				
12. Constant Volume Delivery	X	X	X	X	X		
13. High Maintenance	X	X	X	X			
14. Large Physical Size at Large Volumes	X	X	X	X			
15. High First Cost			X	X		X	
16. Cannot Obtain High Pressure at Low Volume						X	X

Positive Displacement

Figure 1.
Rotary Sliding Vane Compressor

Basically this unit consists of a rotor set eccentric to the bore of a casing. A series of vanes, held against the case by springs or centrifugal force, move in and out of the rotor as it turns. Air is drawn in on one side of the casing, and forced out the other.

Since the vanes are actually sliding on the surface of the case bore, and in the rotor grooves, it is necessary that they be made of a low friction material, or lubricated by some means such as spraying oil into the air inlet.

The vanes are self-adjusting to compensate for wear, but are susceptible to dirt which will cause the vanes to "stick" in the rotor.

Figure 2.
Rotary Two-Impeller Unit

This is a positive displacement type unit consisting of two mating lobed impellers driven by a set of timing gears. These blowers are relatively inexpensive from an initial and maintenance standpoint, although any wear in the gears will result in rapid deterioration of the rotors.

Figure 3.
Reciprocating Piston Unit

This is the most common type and is best suited to furnish air at high pressure and low volume. It is widely used for compressing air at service stations, paint spraying, factory air systems, construction work, etc. One or more of these units is usually included in every plant to provide high pressure air for controls, maintenance, and pneumatic tools.

There are applications in indus-

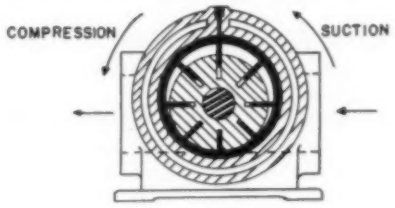


FIG.1 ROTARY SLIDING VANE

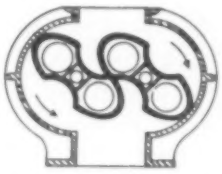


FIG.2 ROTARY TWO-IMPELLER

FIG.3 RECIPROCATING PISTON

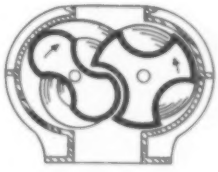


FIG.4 ROTARY TWO-IMPELLER HELICAL

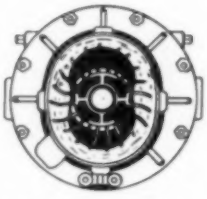


FIG.5 LIQUID PISTON

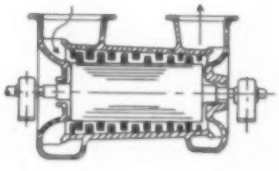


FIG.6 AXIAL BLOWER OR COMPRESSOR

FIG.7 CENTRIFUGAL

try where a piston pump is used to furnish low pressure air by means of a reducing valve. This practice is certainly not recommended, since this is inefficient from a power standpoint, and may result in an oversize compressor or additional smaller units being required at a considerably greater initial cost. In addition, an already high maintenance cost would be increased unnecessarily.

Figure 4.
Rotary Helical Impeller Unit

These blowers are positive displacement pumps similar to Group 2. The impellers are helical or worm cut, and driven by timing gears. The helical impellers eliminate the air pulsation that occurs in the piston and two-impeller type units. The speed ratio of the impellers is a consideration with this unit; the male two-lobe impeller turns one and one-half times the rpm of a female three lobe impeller, and twice the rpm of a four lobe impeller.

Figure 5.
Liquid Piston Pump

In this unit, a vaned impeller rotates in an eccentric housing. A low viscosity liquid is rotated by the impeller within the eccentric case, and the movement of the liquid in and out of the rotor causes the pump to move the air or gas. This pump is limited to moderate volumes at moderate pressures, but is a positive displacement unit with only one moving part.

Centrifugal

Figure 6.
Axial Flow Compressor

This unit has only a single moving part, a conical shaped rotor. The rotor is fitted with several rings of blades or buckets, shaped and set to throw the air axially into rings of stationary or stator blades. The stator blades are shaped and set to reverse the air and throw it against the next stage of rotar blades, this blower being very similar to a steam turbine. They can be built to handle volumes of air in the magnitude of one million cfm, but cannot stand much variation in volume without a serious loss of efficiency.

Figure 7.
Centrifugal Blowers

As the name implies, this blower imparts velocity to the air by

centrifugal force. The velocity energy is then converted to static pressure. This unit, like the axial compresor, has only a single moving part, the rotor, consisting of a shaft and one or more impellers.

Comparisons

The positive displacement compressors can build up a pressure against a stoppage, but inasmuch as they deliver a constant volume, a relief valve must be used to bleed off the excess when the demand is below the full capacity of the unit. It also serves as a safety device in case of a complete stoppage in the suction or discharge line.

The centrifugal blowers, in spite of adiabatic efficiencies in the neighborhood of 60%, are less efficient than the positive displacement units at rated volumes. If the centrifugal unit is operated at reduced volume, it tends to maintain its efficiency because of a decreasing horsepower requirement. The positive displacement unit has a fixed horsepower requirement at rated volume, and any excess must be bled off by the relief valve.

Maintenance

All of the units described have been developed to the point where they are dependable and require little preventive maintenance other than a well practiced lubrication program. The axial flow, liquid piston, rotary sliding vane, and centrifugal blowers have the advantages of only two bearings, while other types have from four to seven bearings and pistons or gears, all of which are points of wear and potential sources of maintenance. The gears in the rotary two impeller and rotary helical impeller units must be maintained within close tolerance because, in addition to driving the impellers, they serve as timing gears to prevent interference between the impellers.

Original Cost

A direct cost comparison cannot be made between types of blowers in all cases, because the original cost may favor any one, depending on the specific volumes and pressures. It is necessary in considering costs to include efficiency, operation, maintenance, and down time.

General

There are other considerations, the importance of which will vary with the individual application:

Noise factor — generally the centrifugal blowers operate more quietly.

Cleanliness of the air — the end use of the air will determine the importance of clean air. The axial flow and centrifugal units will deliver absolutely clean air because of their basic design which presents no possibility for contamination.

Materials—when corrosive gases, or air and gases of extreme temperatures, are to be handled, the two bearing blowers lend themselves to modifications of special materials and tolerances more readily than other types.

There has been some objection to centrifugal blowers because of the "high speed" of operation. The units that are built today normally operate at 3500 rpm, which is no longer considered to be in the "high speed" range, but permits the use of steam turbines or less expensive electric motors which are directly connected and eliminate the use of belt or gear drives.

In sewage treatment plants, rotary two impeller type blowers have been almost universally employed due to custom, and the fact that reasonably priced centrifugal blowers are comparatively new. Positive displacement blowers are still the logical choice for high pressure low volume applications, just as axial flow compressors are effective for very high volumes. Centrifugals have become popular in the field for low and intermediate pressures at all but the lowest volume requirements.

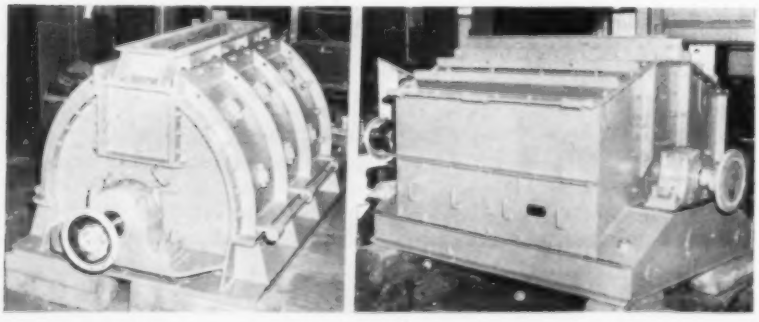
Coal Preparation — Florida

A FLORIDA Power Plant decided to use West Kentucky Bituminous coal, as it was felt that the increasing cost of fuel oil threatened the stability of power rates in the area. It is the first major utility plant in Florida to burn coal.

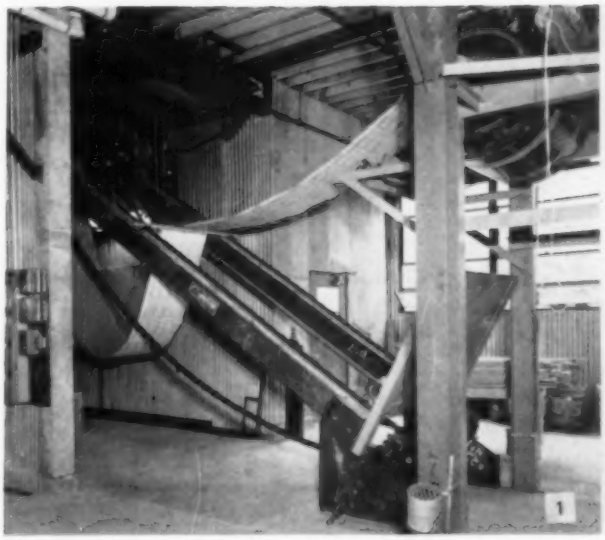
For the coarse coal crushing equipment, a "Pennsylvania" Reversible Impactor will be installed. This unit will handle size feed approximately 3" x 0 and produce a product approximately minus 1¼" ring size (suitable for stock piling), at a capacity of 1,000 tons per hour. It will be driven through a coupling drive by a 400 hp, 900 rpm motor.

For the fine coal crushing equipment, two (2) "Pennsylvania" Reversible Hammermills will be used. When regularly fed with 1¼" x 0 feed, these hammermills will produce a product approximately 95% minus 4 mesh and under (suitable for cyclone furnace burning), at a capacity of 250 tons per hour each. These units are furnished with a coupling drive and are to be driven by 500 hp, 900 rpm motors.

Factory views of the impactor and hammermill, being prepared for shipment to Florida.



You Can SAVE MONEY With Materials Handling Equipment



At Coated Abrasives Co., Holly Springs, Miss. —

Continuous Line Conveyor Dries Sandpaper

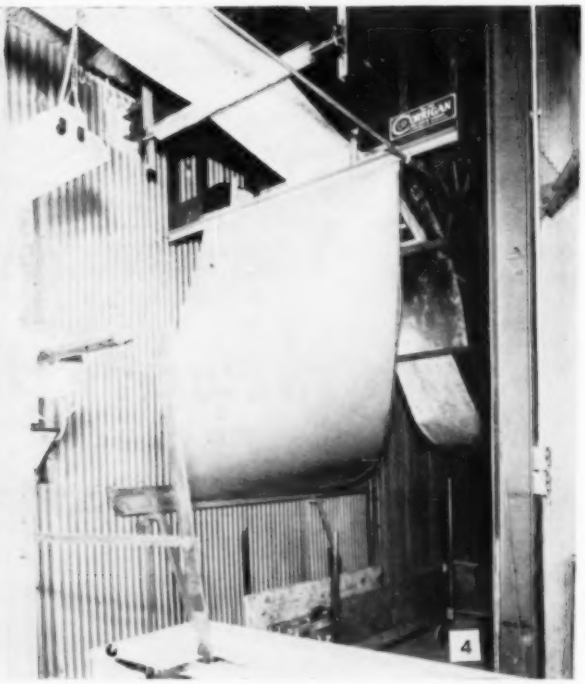
A FESTOON conveyor was recently installed at the Coated Abrasives Co. plant in Holly Springs, Mississippi, a branch of the American Sandpaper Co. of Rockland, Massachusetts, to convey garlands of wet sandpaper through a drying process for the production of Clipper Abrasives (distributed by Sandpaper, Inc.).

The sandpaper travels at the rate of six "sticks" per minute from the making room in a continuous sheet approximately 30-in. wide over a special suction drum to remove a large part of the moisture, as shown at the upper right of Photo 1. Photos 1 & 2 show the beginning of the conveyor where it is inclined upward from the floor for a distance of 20 ft.

Grooved maple sticks are stacked at the foot of the incline and as the chains on each side of the conveyor travel along, attachments pick up one stick at a time, carry it up the incline to form a loop in the sheet of sandpaper and automatically make a garland 10 ft high. The sticks are spaced 4 ft apart and each carries a maximum load of 40 lb at the wet end.

Insulated wall panels help maintain an even heat in the drying room. Heating units are located below the loops, or garlands of sandpaper as seen in Photo 2, which provide for a maximum temperature of 180 F, to complete the drying operation. A humidifier is installed to keep the air from getting too dry.

Photo 3 is a general view of the drying room in which the conveyor is divided into four sections, respectively 54 ft, 150 ft, 90 ft, and 180 ft long. The reason



these sections are of different lengths is that when the sandpaper is going into the drying and festooning process on Unit #1 (the 54 ft conveyor), the paper is taken on at a fast rate of speed for proper looping; then, on the 150 ft section of Unit #2, it is slowed for drying.

At the end of this drying the paper passes through a sizing operation, for which the festoons are removed and the paper run flat. Unit #3, the 90 ft section, is run fast to take out the festoons and delivers to Unit #4, 180 ft long, which runs very slowly and again forms festoons so that the sandpaper will have time to dry as it travels. There is a 20 ft inclined portion of conveyor before delivery of the paper to the slow moving 180 ft long conveyor so that the festoons may hang down without touching the floor. The whole operation is in one continuous line.

When the sandpaper has completed the festoon drying a chute intercepts the sticks as they drop off the end of the conveyor and deflects them into a floor truck (Photo 4) for return to the beginning of the operation. The dry sandpaper continues on to the cutting and finishing room. The drives for each of the conveyor units consists of four Westinghouse Vari-Speed motors of 1½ hp, 3 hp, 2 hp, and 3 hp, respectively.

By FRANCIS A. WESTBROOK. Photos courtesy of J. C. CORRIGAN CO., INC.

In Tennessee . . .

Air System Reduces Plant Handling Costs

TO IMPROVE mill sanitation, decrease installation and maintenance costs, speed production, and increase flour and feed mill profits, H. F. Leonhard, Chief Engineer for W. J. Savage Company Flour & Feed Mill Division, Knoxville, Tennessee, has designed and placed in operation a new air-system for removing screenings, cleanings, and other impurities. This new development is also used effectively for conveying corn meal. Both the Sevierville Mills of Sevierville, Tennessee, and the Power City Mills of Elizabethton, Tennessee, are utilizing the system to the fullest extent.

Using 6-in. pipe, with inlets from as many sources as desired, located in any part of the mill, combined with a blower-fan of sufficient power to transport the material over hundreds of feet of space—in any and all directions, this application has been found to be more effective than previous methods.

Expensive and time-consuming sacking and conveying methods of waste-removal are eliminated in mills using this air-system. And, in addition to its efficiency, the air-pipe is as clean at the end of each day as it was at the beginning of the operation—no conveyors or sacking setups to clean and maintain.

For manufacturing corn meal, this application has been modified to operate as a conveyor, an impactor with sufficient force to effectively destroy insect eggs, a cleaner, and an additional break for the meal itself. In every case the entire mill is kept cleaner, thus greatly reducing routine cleanings and sweepings. Actual savings in money, over older and less efficient methods, will run to several hundreds of dollars annually.

At H. W. Lay & Company, Atlanta, Ga. —

Fork Trucks

Save $160,000 The First Year

2000 lb boxes of potatoes are tiered 4 high to a height of 200-in. in the storage rooms. At the right, box is lifted up over 2400 lb capacity processing hopper and potatoes dumped into the hopper. Removable arm on side holds the box in place.

ONE OF THE nation's largest manufacturers of potato chips and related products — H. W. Lay & Company, Inc., Atlanta, Georgia — estimate they will save $160,000 the first year with the 4 Lewis-Shepard electric fork trucks they recently purchased.

With Lay's big production, materials handling is of prime importance because tons and tons of potatoes have to be moved each day from boxcar to storage and from storage to processing. Up to three million pounds of potatoes in special box-type pallets are stored at any one time in air-conditioned rooms.

Normally, potatoes come into the Lay plant in carload lots in 100 lb burlap bags. With the old system, Lay used hand lift trucks and individual bags had to be handled and re-handled several times which was not only time consuming and costly but back-breaking labor as well. Now, with the four Lewis-Shepard electric fork trucks, they handle potatoes in **unit loads** weighing 2000 lb.

In conjunction with the fork lifts, they use pallet boxes which measure 48" x 51½" x 48" high. To unload a boxcar, formerly done by hand trucks, the potatoes are immediately dumped from their bags into the pallet boxes — 20 sacks of potatoes to a box. The boxes are picked up then by the fork lifts and moved directly into the storage room.

This type of bulk handling not only eliminates several hand operations but permits **full use of storage areas.** Lay states they have gained more than 20,000 ft of

Loads of packaged potato chips on plywood sheets are taken from end of processing line, moved to shipping area and placed on a gravity conveyor. To rotate the stock, shipments are made from the other end of the conveyor.

additional floor area which now may be devoted to other-than-storage purposes.

In an average day each of the easily maneuverable fork trucks used in the raw storage and processing areas handles approximately 160,000 lb of raw potatoes. This work load formerly required twice the number of men now used in these operations.

H. W. Lay & Company, Inc. estimate that by reclaiming 20,000 ft of floor space worth $7.00 a sq ft they are saving $140,000 in additional floor space. Along with a saving of $20,000 a year in labor alone over the hand lift truck methods, this makes a total $160,000 saving by using the Lewis-Shepard electric fork trucks.

At United Rice Milling Products Co.,

Mechanized Handling System Reduces Labor Costs 75%

INSTALLATION of an extensive conveyor system and the replacement of hand trucks with fork trucks are responsible for considerable savings at the United Rice Milling Products Company, New Orleans, La.

The scope of the handling problem becomes evident when it is considered that 5 carloads of rice (200,000 lb) are handled daily. Incoming cars are spotted adjacent to pits in the dock-floor and power shovels scoop the rice into the pit. It is then conveyed by bucket elevators and air and screw conveyors to large bins on the fourth floor where it is stored. When ready for milling, it is fed by gravity chute to mills on the first floor. Formerly, much of this handling was done manually. The conveyor system eliminates nearly all of the manual operations.

After the milling operation (removing chaff, grinding, polishing and cleaning), the rice is conveyed to clean rice storage bins on the second floor. When ready for packaging, conveyors move it on to packaging machines.

After packaging is completed, the rice is either temporarily stored or shipped. Handling the finished product was formerly a tremendous task that involved large crews of men transporting 60 lb rice bales and bagged rice (100 lb) throughout the plant on hand trucks. Loading trailer trucks, for example, required ten men, using two-wheel hand trucks, and took 20 minutes to complete.

Now, the 60 lb rice bales and bagged rice are palletized and transported by Mercury 'Jeep' fork trucks. Palletized loads are picked up and moved to warehouses or directly into freight cars or trucks where they are loaded for immediate shipment. Loading a truck trailer takes only two men and a 'Jeep' and requires only 30 minutes. This handling operation alone saves two man-hours per trailer.

The 'Jeeps' operate on a rather strenuous 24 hour schedule and are removed from service only to conform with the mill's preventive maintenance program.

In Alabama . . .

Bulk Handling Permits Savings

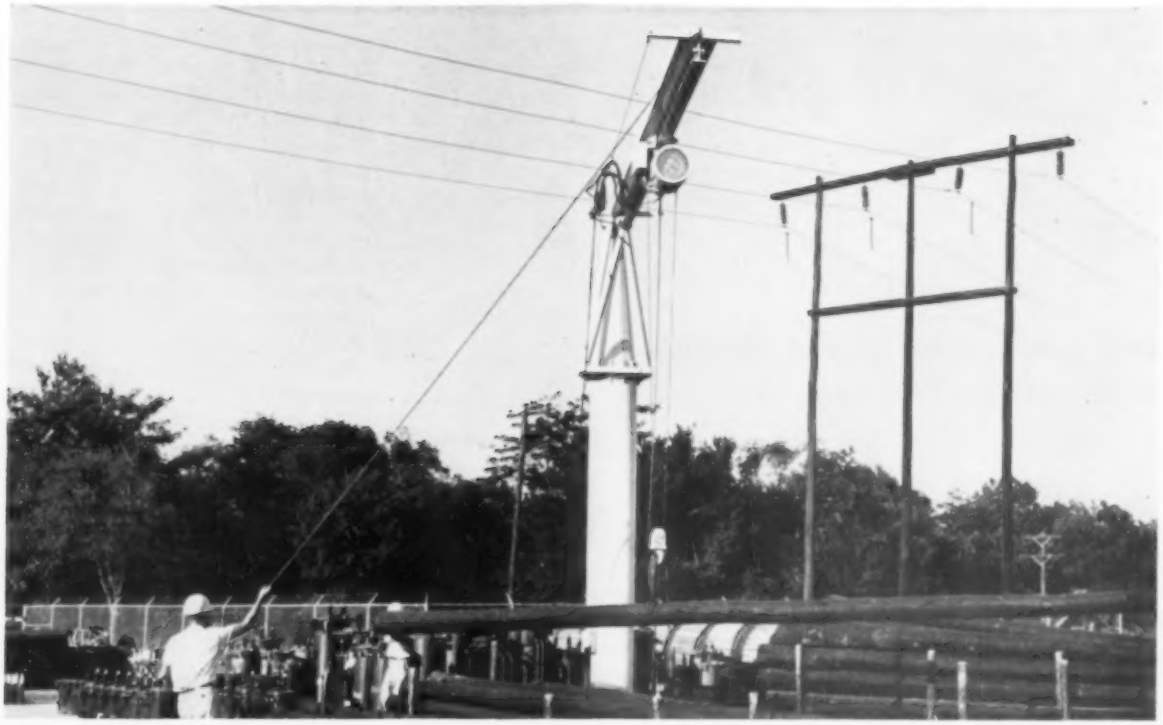
BULK purchase and handling of acetone cut material costs more than $800 and eliminated about 150 labor hours in one year at the Birmingham, Ala., plant of Air Reduction Sales Co., a Division of Air Reduction Co., Inc.

The savings resulted from installation of an underground tank to store acetone and a Deming vertical turbine pump to transfer the liquid to acetylene cylinders.

Air Reduction uses about 140 lb of acetone per day at this location. A 3,000-gallon tank installed in June, 1955, permits the firm to buy it in bulk, saving two cents per pound. Tank trucks deliver the acetone, pumping it into the storage tank. The material was formerly delivered in 350-gallon drums.

A Deming turbine pump, designed to handle industrial solvents, is mounted above the underground tank and transfers the acetone directly into the cylinders. Previously, workers connected plunger-type hand pumps to the drums to fill the cylinders. Officials estimate labor savings are from two to four hours per week.

The new storage system also permitted removal of racks which held the large drums. The space is now used for other storage.



Reducing pole-loading time from 15 minutes to 2 minutes is one of several benefits achieved by Mississippi Power & Light Company through use of a R. G. LeTourneau jib crane with "inching control" hoist. Note large transformers and reels of conductor in background, also handled by jib crane arrangement.

Hoist & Jib Crane Cuts Handling Time and Manpower Requirements

LIKE OTHER utilities, the Mississippi Power & Light Company is faced with the problem of keeping rates down as expenses skyrocket. The company, under the direction of President Baxter Wilson, has attacked the problem from several directions—one of the most effective of which is in the field of materials handling.

An example of how this phase of the program paid dividends is the recent installation of a 4-ton "inching control" hoist and jib crane (both manufactured by R. G. LeTourneau, Inc., of Longview, Texas) at Mississippi Power & Light Company's new Service Center at Vicksburg, Miss.

From a financial standpoint, Mr. Wilson recently reported: "The LeTourneau crane, plus hoist, concrete slab and mountings, represents an investment of approximately $5,500. Judging from the period it has been tested by us, however, we are confident it will pay for itself in less than two years."

According to Mr. Wilson's account, the new jib crane permits the handling of transformers, poles, and reels of conductor "in a matter of minutes." At the same time, he said, it eliminates the need for a large stockpile at the Vicksburg operation.

The old method of handling materials required poles to be at ground level. The line truck, with trailer attached, was spotted at the end of the poles. The winch line was passed over a sheave and headache bar, over the trailer to the pole. The pole then was pulled up and over the trailer into balance position. Also an A-frame had to be set up to load any number of poles.

"This method required 15 minutes per pole by several members of the nine-man crew who stood by until the equipment was mounted," Mr. Wilson said. "The new operation takes only approximately two minutes per pole."

Another big advantage to the

company is that two people can load heavy equipment which is to be taken to an emergency operation. The crane also eliminates certain safety hazards and "idle dollars" invested in large stockpiles. For instance, the sorting of poles according to size makes it unnecessary to buy carloads of poles in different sizes. And, of course, the space factor is quite important in many instances.

Mr. Wilson gave credit for the idea of purchasing the crane to Joe Box, who at the time was division engineer at Vicksburg and who since has been elevated to assistant manager of the Central Division. Mr. Box had observed the crane in operation at a LeTourneau plant, then drafted the layout as to how Mississippi Power & Light Company could adapt it to its own operations.

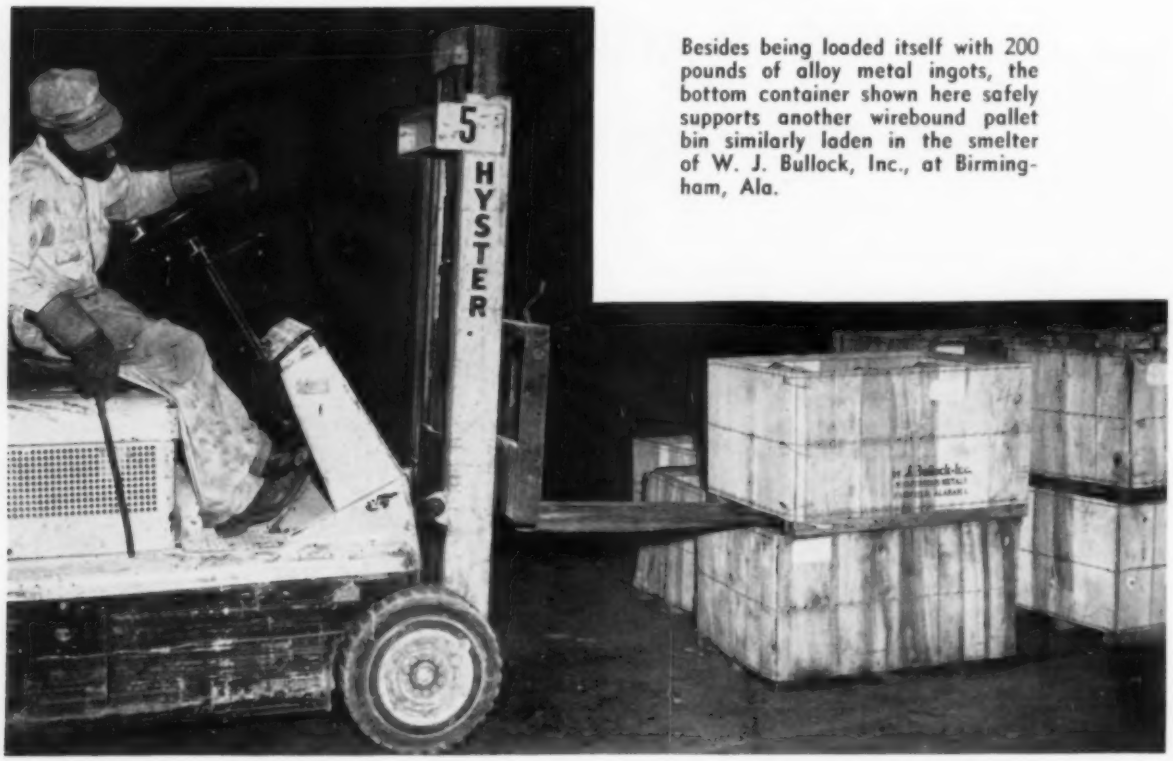
At W. J. Bullock, Inc., Birmingham, Alabama, Wirebound Packaging Pays Off . . .

A Ton Per Box Is Not Too Much

PACKAGED metal alloy ingots, more than a ton to a container weighing only 40 lb, are winning praise for W. J. Bullock, Inc., Birmingham, Ala., non-ferrous smelter, for bringing about drastic materials handling economies to its customers.

Adoption of "packaging" by the smelter, the largest of its kind in the South, was a natural sequence to the installation about three years ago of costly and elaborate equipment to carry ingots directly from the furnace, through cooling, to the packaging area without manual labor.

The package used by W. J. Bullock, Inc., for ingots is a wirebound pallet bin. It weighs only 40 lb, but is packed with 88 bronze ingots weighing 25 lb each, or a total of 2200 lb. In many cases, the wirebound containers are used repeatedly for shipment, being returned to the smelter after being unpacked by customers. Some of the bins have made upwards of a dozen trips between being stacked, fully packed, two and three



Besides being loaded itself with 200 pounds of alloy metal ingots, the bottom container shown here safely supports another wirebound pallet bin similarly laden in the smelter of W. J. Bullock, Inc., at Birmingham, Ala.

high in the Bullock warehouse and customers' storerooms.

The ingots are dumped by a conveyor into a sturdy wooden bin beside which wirebound containers are placed two at a time. Workers take the ingots from their receiving bin and place-pack them in the wirebound pallet bins. When one is full, it is carried away by fork-lift truck and an empty one replaces it to be packed.

The idea to package heavy ingots for shipment came to W. E. Bullock, president of the smelter, when he saw silicon metal and other heavy alloys delivered to the smelter by suppliers in open-top wirebound pallet bins bearing stencilled legends showing a tare weight of only 125 lb, but net weights up to 2135 lb. Despite their gross weights of up to 2260 lb, the containers were stacked safely two high before being unpacked.

Bullock summoned wirebound shipping container engineers, who collaborated with Bullock company engineers in designing the pallet bin now used for packaging a considerable portion of the alloy metal ingots.

The packed bins often are shipped with open tops in customers' own trucks, but prefabricated lids are attached to the containers to make them completely closed when they are shipped by common carrier or when a shipment includes ingots of different compositions. In such cases, lids prevent even accidental mixing of different kinds of ingots and also prevent pilferage.

Adoption of the wirebound pallet bin has speeded materials handling and storage in the W. J. Bullock, Inc., smelter itself, and it also has eliminated much manual labor at the plants of customers. Ingots formerly were simply thrown on the ground from the floor of the truck during unloading, so that they had to be handled by hand individually, usually being palletized, to be moved into storage. Now, customers simply unload the ingots over a ton at a time with fork-lift truck and take them to storage.

Courtesy Wirebound Box Manufacturers Association.

Product Protection With Belt Conveyor

THIS belt conveyor at the Fish Products Co., Lewes, Delaware, was placed on a dock for conveying fish (menhaden or moss bunkers) from the fishing boats into the processing plant. Belt is actually sheathed and this photo was taken during installation. The 54" wide belt carries approximately 500 tons of fish per hour when the boats are being unloaded.

Belt conveyor system, with Chain Belt components, eliminated seven different drag conveyors, which had carried the fish from the scales to the processing house—but in so doing had mutilated the fish so badly that a great deal of oil was lost.

Tractor Shovels Keep Production High

THE C. I. Capps Company, Inc., of Jacksonville, Florida, produce castings of iron, bronze and aluminum which weigh anywhere from half a pound to a ton. To meet material handling requirements in a foundry so greatly diversified in their products, the company uses a fleet of three Model HA "Payloader" tractor shovels.

The "Payloader" units handle from 60 to 80 tons of foundry sand per hour making from 100 to 200 ft hauls. In addition, the units are used in moving the fabricated castings of all sizes.

At Jackson, Mississippi . . .

Flanged Wheels Give Fork Truck Fleet Flexibility

FLANGED wheels fixed to a regular fork truck permit it to travel on autoclave rails, giving added flexibility to the fork truck fleet at Jackson Ready-Mix Concrete, Jackson, Miss. To move racks of concrete blocks into its 100 ft long autoclave for high pressure steam curing, the company rigged two pairs of steel flanged wheels on one of its Clark Utilitrucs. The unit travels on rails in autoclave floor.

Front flanged wheels are bolted to the regular wheels. Rear flanged wheels are supported in a "U" block which is bolted to the fork truck frame in direct alignment with the regular wheels. Flanged wheels clear floor by several inches when Utilitruc is traveling in normal manner. Modification cost $250.

At Lenoir, North Carolina . . .

Automatic Tow-Line Operation Steps Up Furniture Production

A COMPLETELY mechanized production line movement of living room chairs and sofas at the Lenoir Chair Company, Lenoir, North Carolina, has stepped up production as much as 25% to 40% with 140 men working on the line.

Efficient system is based on the use of 3′ x 3′ castered trucks, pulled around an "S" shaped pattern by a continuous under-floor chain. Faultless Caster Corporation swivel and rigid plate casters are standard equipment on the trucks. The 1200 ft conveyor line provides the first mechanical line operation for chair manufacturing similar to those utilized by appliance and automotive manufacturers.

The continuous conveyor delivers furniture frames and upholstering materials between an entire series of work stations on Faultless castered all-steel 2-level trucks measuring 3′ x 3′. Completed chairs come off the end of the line, ready for crating. System brings all needed materials to the workmen, saving many man-hours of gathering materials and then returning to the work areas.

Thread guards on each caster prevent winding of textile ravelings around wheel axles; and consequently, conveyor trucks are kept in hour-after-hour operation except for ordinary lubrication maintenance. Use of cushion tread Ruberex wheels assures a quiet operation and the plant's smooth cement floors are protected against wearing and chipping.

The new 84,000 sq ft building in which the chair towveyor system is installed is part of the company's current modernization program.

29 Free Materials Handling Ideas & Methods — Page 60 — Use SPI Reader Service

Still other Jeffrey equipment, not visible here, is contributing to the high efficiency of this concrete products plant.

Flexible standard units are engineered by **JEFFREY** to meet your special requirements

Whether you're modernizing an existing system or planning an entirely new plant layout, let Jeffrey engineers assist you. They'll recommend the combination of conveying and processing equipment giving you highest production at lowest possible cost. Jeffrey's long line of standard units permits almost endless combinations to meet special requirements.

For this help, and for catalogs containing complete information on Jeffrey equipment, write to The Jeffrey Manufacturing Company, Columbus 16, Ohio. Replacement parts available from Jeffrey authorized distributor stocks.

In addition to the units named, the following Jeffrey equipment is widely used in the aggregate, stone, sand and gravel, clay, phosphate and sulphur rock industries:

Scraper Conveyors • Spiral Conveyors • Pulverizers • Power Scoops • Car Pullers • Vibrating Conveyors • Magnetic Separators • Stackers • Batchers • Chains • Feeders • Grizzlies • WAYTROLS • Jigs.

CONVEYING • PROCESSING • MINING EQUIPMENT • TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

JEFFREY

Materials Handling Ideas & Methods

FOR FREE INFORMATION—Circle code number on page 17 or 18

W-1 — Conveyor Idlers — Bulletin SI-116 describes pre-lubricated "UST" Conveyor Idlers. Incorporating Timken bearings and Garlock Klozures, construction permits operating without lubrication for 1-3 years or more. — CONTINENTAL GIN COMPANY, Birmingham 2, Ala.

W-2 — Vertical Transportation — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumb-waiters, and modernization and maintenance equipment for use in industrial, utility and service plants.—OTIS ELEVATOR CO., 260 11th Avenue, New York 1, N. Y.

W-3—Tramrail Systems — 12 page Booklet 2008-L covers principal components used in tramrail systems, stresses developed in tracks, and track peening and its solution. Gives case study illustrations. — CLEVELAND TRAMRAIL DIV., Cleveland Crane & Engineering Co., 1157 E. 283rd St., Wickliffe, Ohio.

W-4—Monorail Case Studies—File F-1—Offers 20 new studies of engineered monorail applications in various industries. Factual information, complete with photos and plain drawings. — AMERICAN MONORAIL CO., 13107 Athens Avenue, Cleveland 7, Ohio.

W-5—Conveyor Belt Repairs—Bulletin R-700 and Folder R-4 describes the "Rema" method of making vulcanized repairs without heat. Holes, gouges, rips and tears can be repaired on the job. Curing time delay is eliminated. Belts can be put into service immediately after repair is made.—FLEXIBLE STEEL LACING COMPANY, 4625 Lexington St., Chicago 1, Ill.

W-6—Hand Trucks—Bulletin T-I describes full line of steel framed platform and two wheel hand trucks; specifications and applications. — THE FAIRBANKS COMPANY, 393 Lafayette St., New York 3, N. Y.

W-7—Screw Conveyors — Catalog ID-541, 68 pages — Illustrates and describes standard and special types of conveyors, with engineering data necessary for selection. Tables give sizes, types, speeds, horsepowers and other information. Accessories included. — CONTINENTAL GIN COMPANY, Birmingham 2, Ala.

W-8—Mechanical Aerial Ladder — 4-page catalog, describing features of Holan Series 2200 ladder, features new band-type brake, duo-level platform and rung construction. — J. H. HOLAN CORPORATION, 4100 West 150th Street, Cleveland 11, Ohio.

W-9—Belt Fastening Tools—Bulletin F-110 and F-111—Describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith.—FLEXIBLE STEEL LACING CO., 4625 Lexington St., Chicago 1, Ill.

W-10—Freight Elevators — Booklet A-414 describes the new Plunger Electric Freight Elevator designed for low-rise, light and heavy duty freight handling requirements. — OTIS ELEVATOR COMPANY, 260 11th Ave., New York 1, N. Y.

W-11—Hydraulic Aerial Ladders — Catalog outlines features of Series 2100 all-hydraulic ladder, which rotates 360 degrees, reaches up to 40 ft in the air and elevates to 75 degrees.—J. H. HOLAN CORPORATION, 4100 West 150th St., Cleveland 11, Ohio.

W-12—Materials Handling—Catalog T-54, 34 pages—Gives structural details, specifications, engineering data, photographs on over fifty models of Fairbanks two-wheel and platform trucks, including hand trucks, steel framed platform trucks, lift jack platform trucks, wagon trucks and dollies. — THE FAIRBANKS CO., 393 Lafayette St., New York 3, N. Y.

W-13—Industrial Cranes — Bulletin PT 1253, 8 pages — Describes a new line of Push-Type Cranes with improved construction features, including light duty models available in five different capacities, and heavy duty models available in seven different capacities. Illustrations, applications. — INDUSTRIAL CRANE & HOIST CORP., 1536 South Pauline St., Chicago 8, Ill.

W-14—Steel Strapping — Catalog "Blue Book of Packaging # 3" describes various steel strapping applications, giving technical data and benefits of each.—GERRARD STEEL STRAPPING DIV., United States Steel Corp., 2915 West Forty-Seventh St., Chicago 32, Illinois.

W-15—Suspension Scales — Bulletin 82 describes company's Suspension Hopper Scales, available in capacities from 500 lb through 100,000 lb, for batching, charging, proportioning, filling, compounding, and processing. Includes illustrations and details on design. — THE WEBB CORP., Webb City, Mo.

USE SPI READER SERVICE

Service Cards – Page 17

W-16—Stationary Batteries—Catalog describes improvements in stationary batteries which are expected to extend service life up to 10% and reduce maintenance requirements. Features a new battery grid alloy and plastic containers, telling how the alloy's high resistance to corrosion and its ability to withstand overcharging increase the efficiency and service life of the batteries.—EXIDE INDUSTRIAL DIVISION of The Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.

W-17—Hydraulic Dumpers—2-page circular describes company's line of Tubar dumpers for kegs, drums, skids, pallets, etc. Includes dimensions, specifications and illustrations. Manual and electric models available in capacities up to 2,000 lb; dumping heights to required specifications; stationary or mobile units. — UHRDEN, INC., Dumpers Div., Dennison, Ohio.

W-18—Wire Rope—Bulletin No. 5647 illustrates and describes various wire rope applications—helicopter, well drilling, sling lift, tower dismantling, elevator installations and swaged fittings. — MACWHYTE COMPANY, 2940 Fourteenth Ave., Kenosha, Wisconsin.

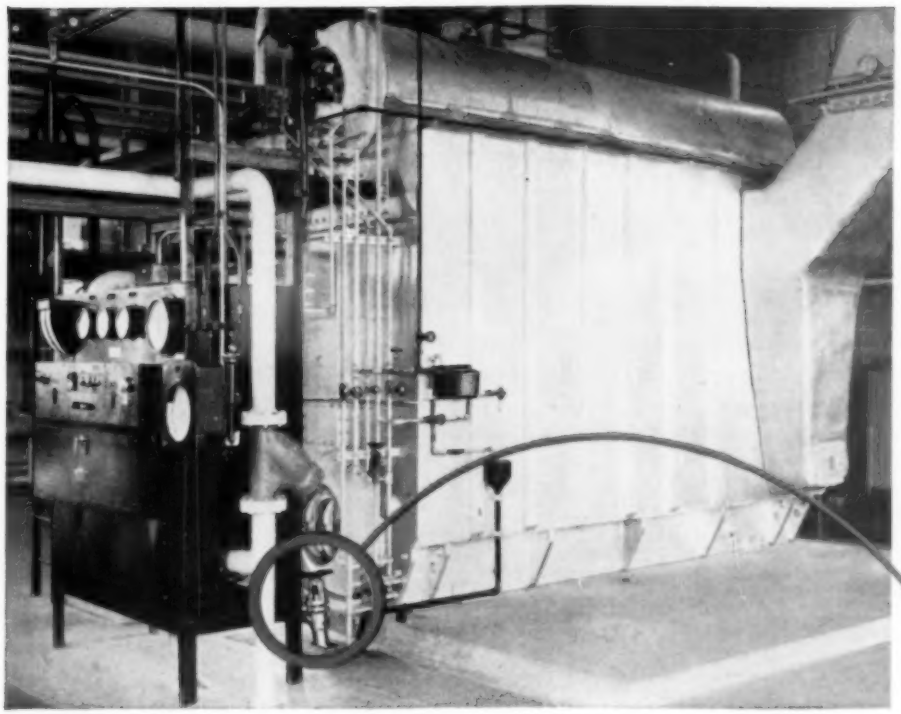
W-19—Tramrail Systems — Booklet No. 2008-M covers principal components of overhead materials handling systems. Describes track design and advantages of supporting it flexibly. Includes formulas and figures for comparing various track sections. — CLEVELAND TRAMRAIL DIV., The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

W-20—"Walkie" Truck—8 page catalog describes complete line of electric powered, "walkie" truck models. Covers the capacity and dimensional specifications on all the lead around trucks, illustrates construction details, and gives data on pallet trucks, low lift platform trucks, tractors, outrigger models and counterbalanced models.—THE MOTO-TRUC CO., 1959 East 59th Street, Cleveland 3, Ohio.

W-21—Vertical Lift Conveyor—Bulletin Form 1400-56 describes how the vertical lift conveyor can replace costly elevators, save space and time and cost of an elevator operator. Includes complete details and specifications and gives illustrations showing a variety of applications to which the lift can be put and where it can be installed to save time and space. — THE RAPIDS-STANDARD CO., INC., Rapistan Building, Grand Rapids 2, Michigan.

W-22—Overhead Crane — Bulletin U-200-1 illustrates and describes complete line of underhung overhead cranes, including push type flexible bridge and standard, hand geared, and various modifications of motor-driven types. Also includes various types of hangers for monorails and underhung crane runways, complete

(Continued on Page 62)



COMBUSTION ENGINEERING ADOPTS YARWAY SEATLESS BLOW-OFF VALVES FOR PACKAGE BOILERS

Combustion Engineering, Inc. on this package boiler installation at the Orangeburg Pipe Plant in California, again includes Yarway Seatless Blow-Off Valves as part of the "package."

It's a popular idea—and growing fast. All *good* package-type boiler installations are *better* when equipped with Yarway Seatless Blow-Off Valves.

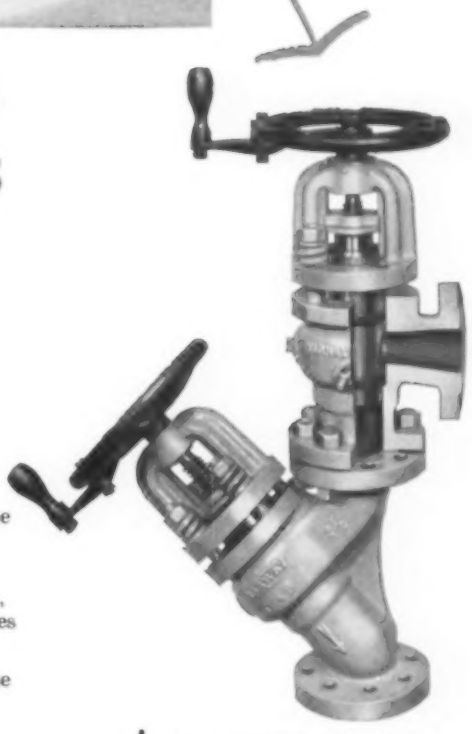
More and more boilermakers are standardizing on Yarways, and more and more boiler users are expecting the advantages of Yarway Blow-Off Valves on their package units.

Get the full story on why more than 15,000 boiler plants use Yarway Blow-Off Valves, some for 30 to 40 years.

YARNALL-WARING COMPANY

Home Office: 116 Mermaid Ave., Phila. 18, Pa.

Southern Representative:
ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.



Yarway Type "B" Seatless Tandem Blow-Off Valve. Note balanced sliding plunger design with no seat to score, wear, clog or leak. Pressures to 400 psi.

YARWAY BLOW-OFF VALVES

Materials Handling Ideas & Methods (Continued)

track and trolley data, and electrical information. — CHICAGO TRAM-RAIL CORP., 1330 South Kostner Ave., Chicago 23, Ill.

W-23—Radio Equipment — 6-page brochure describes two-way radio equipment for industrial application which can be used either with gasoline or electric powered materials handling vehicles. — RADIO CORP. OF AMERICA, Commercial Electronic Products, Camden 2, N. J.

W-24—Electronic Tractor—Bulletin 566 gives up-to-date information on Guide-O-Matic, a battery-powered electronically controlled tractor that tows trailer trucks over desired routes without an operator. — BARRETT-CRAVENS CO., 628 Dundee Road, Northbrook, Ill.

W-25—Tractor-Shovels—4-page bulletin describes and illustrates the 4-wheel-drive tractor shovel which features fully power-shifted transmission, torque-converter drive, planetary final drives, torque-proportioning differentials, 40 degree bucket break-out at ground level, powerful pry-out action, longer wheel base for greater stability, 4-wheel hydraulic brakes, power-boosted steering, closed, pressure-controlled hydraulic system and double-acting hydraulic system.—THE FRANK G. HOUGH CO., Libertyville, Ill.

W-26—Traction Hoist — Data illustrates and describes "Cable Car" Swing Stage Traction Hoist which incorporates manual, electric and air-powered brakes.—OHIO HOIST & MFG. CO. INC., 13111 Shaker Square, Cleveland 20, Ohio.

Service Cards – Page 17

W-27—Continuous Mixer & Unloader—6-page data sheet Uc describes A-S-H Type B continuous mixer and unloader which removes ash or other dry material from storage bins, mixes it with water and discharges it into waiting trucks or rail cars. Includes illustrations and dimensional and construction tables. — THE ALLEN-SHERMAN-HOFF COMPANY, 259 Lancaster Ave., Wynnewood, Pa.

W-28—X-Weld Chain—Bulletin DH-319 describes the chain which resists bending, breaking, and kinking, and describes the properties and applications of specially manufactured heat-resisting and acid-resisting X-Weld chains and studs. Includes specifications, weights and dimensions. — AMERICAN CHAIN DIVISION, American Chain & Cable Company, Inc., York, Pa.

W-29—Power-Rotated Jib Crane — Bulletin describes all-electric 360° revolving jib cranes in 6, 7½, 10 and 15 ton capacities which provide power handling for 1936 sq ft of floor space. Design permits fraction-of-an-inch control. — R. G. LeTOURNEAU, INC., Longview, Texas.

Spray Water Control to Reheater Attemperators

(*Starts on Page* 44)

is located in series with a controlling valve of the open-and-closed type, this valve receiving its impulse from a flowmeter in the feedwater line.

Fig. 2 illustrates the cross-section of a multiple pressure reducing orifice and shows clearly that the pressure is broken down in a series of small orifices, each one of which has a moderate pressure drop across it. This is the reason for the reduction of wear over a single orifice such as provided by a valve which takes the full pressure drop.

Application of Method

The application of multiple pressure reducing orifices to control of spray-water flow is illustrated on Fig. 3. As usual, the recirculating by-pass is taken from the pump discharge line, upstream of the check and gate valves. Orifice (1) is selected to pass the minimum recommended flow under the existing pressure differentials, while valve (A) is the by-pass valve controlled from the feedwater flowmeter.

A jumper line is provided around the recirculation by-pass. Two orifices (2) and (3) are located in this jumper line and are followed by control valve (B). These orifices and this valve are so selected that the desired spray-water pressure can be maintained under all conditioned at a point between the two orifices. The spray-water can then be diverted from that point and lead to the attemperator sprays through control valve (C). The latter is regulated exactly as it would be in present installations, through a two- or three-element control.

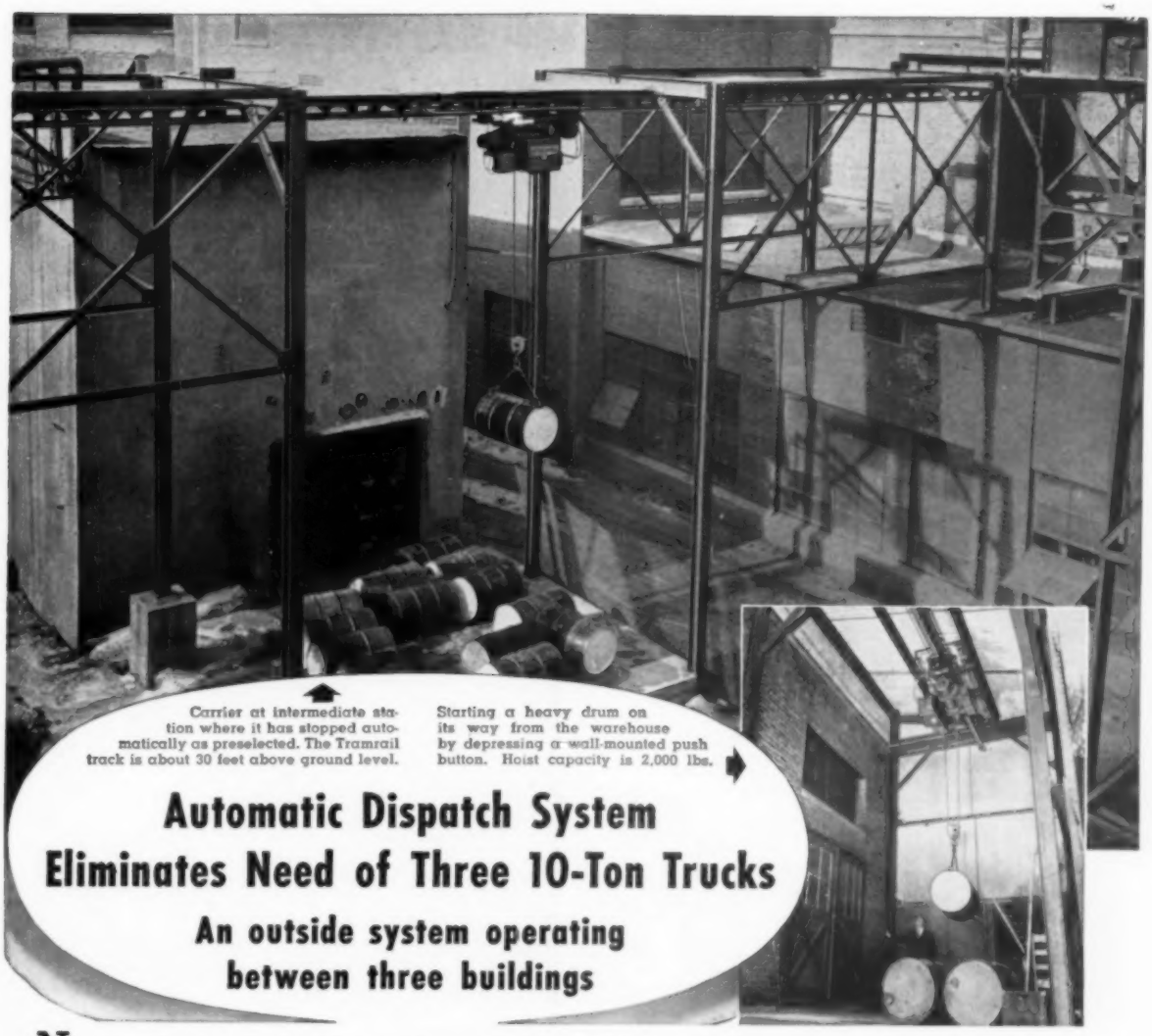
Calculations

Assuming, for instance, that we are dealing with an installation such as described on Fig. 1 and that two pumps are used normally in parallel. At full load, each pump would have to provide 40,000 lb/hr of spray-water. If the desired pressure were 450 psig, and if a 50 psi drop were necessary through valve (C) at full load, the pressure at the point between orifices (2) and (3) would be selected at 500 psig.

Assuming further a discharge pressure of 2450 psig at full load, a pressure at the heater (including static elevation to the heater) of 125 psig and a pressure drop through valve (B) of 50 psi minimum, we can set the following requirements for orifices (2) and (3):

Flow ..... 40,000 lb/hr
Drop through orifice
(2) .... (2450 —500) = 1950 psi
Drop through orifice
(3) 500 —(50 + 125) = 325 psi

Valve (B) becomes a simple constant pressure regulator, set to maintain a pressure of 500 psig between the two orifices regardless of the flow through orifice (3). Thus, when the total flow of 40,000 lb/hr is diverted through valve (C) to the attemperator, valve (B) closes. The maximum pressure drop through this valve becomes approximately 425 psi (500 psig less a backpressure of 75 psig at reduced loads). In turn, the maximum pressure drop through valve (C) becomes 300 psi (500 psig less minimum spray pressure of 200 psig at reduced loads). Both these valves are much



Carrier at intermediate station where it has stopped automatically as preselected. The Tramrail track is about 30 feet above ground level.

Starting a heavy drum on its way from the warehouse by depressing a wall-mounted push button. Hoist capacity is 2,000 lbs.

Automatic Dispatch System Eliminates Need of Three 10-Ton Trucks

An outside system operating between three buildings

Not only was the need of two 10-ton trucks obviated by a Cleveland Tramrail automatic system at the Mica Insulator Company, Schenectady, N. Y., but the purchase of a third truck was made unnecessary. While the trucks had to travel over a circuitous route, only a short, straight Tramrail track is required for the overhead system.

Many man-hours of trucking and handling time are saved because materials dispatched over the automatic Tramrail system can be handled by production workers along with their regular jobs. A great amount of handling on an elevator has also been eliminated and better elevator service is available for other purposes.

The system has been found particularly helpful during night shifts when an extra drum of varnish or roll of cloth is sometimes needed. Formerly trucks were never available for night hauling. The Tramrail equipment paid for itself out of savings it created in a short period.

GET THIS BOOK!

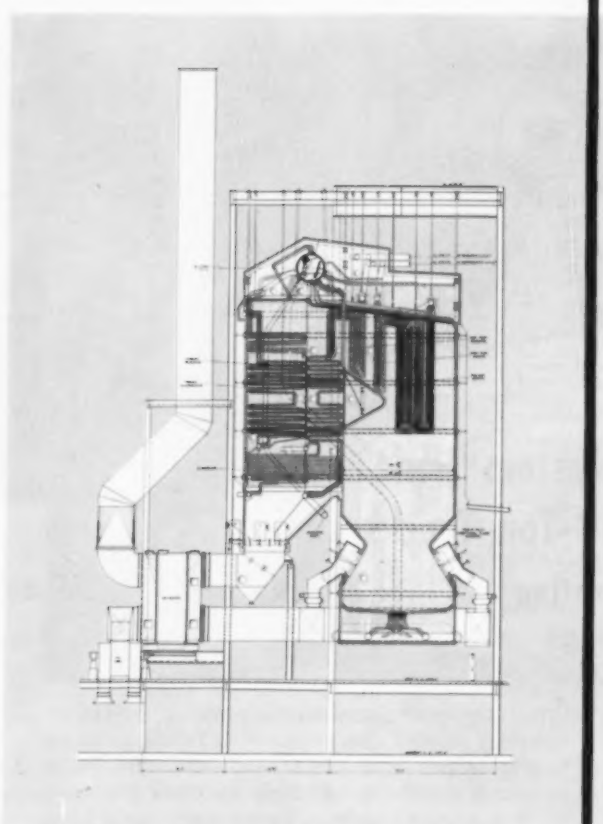
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7465 East 284th Street Wickliffe, Ohio

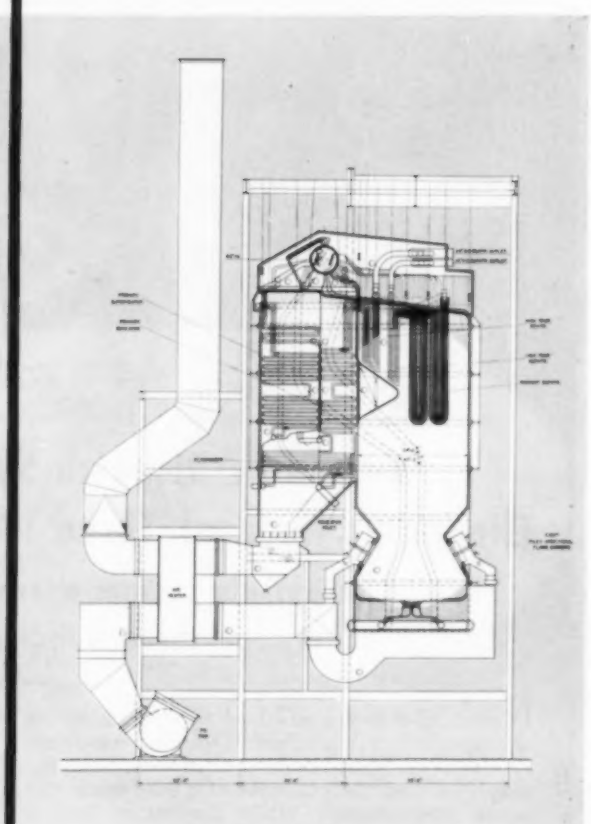
CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

why southern and southwestern

RILEY TURBO



Riley Reheat TURBO FURNACE Unit:
For Texas Public Utility
Capacity: 825,000 lbs/hr. Pressure: 1750 psig design
Superheat and reheat temperatures: 1005 F
Fuels: Natural Gas, Oil, Future Coal
12 Riley Directional Flame Burners
Pressurized Turbo Furnace



Riley Reheat TURBO FURNACE Unit:
For Texas Public Utility
Capacity: 1,250,000 lbs/hr. Pressure: 2125 psig
Superheat and reheat temperatures: 1005 F
Fuels: Natural Gas, Oil and Future Lignite
16 Riley Directional Flame Burners
Pressurized Turbo Furnace

OTHER RILEY TURBO FURNACE UNITS INSTALLED OR ON ORDER

Northeast Paper Mill
One 175,000# Unit
Pulverized Coal

West Va. Chemicals Co.
One 289,000# Unit
Pulverized Coal

Eastern Seaboard
Public Utility
Three 500,000# Units
Fluid Coke

Southern Aluminum Co.
Two 320,000# Units
Gas, Oil, Future Coal

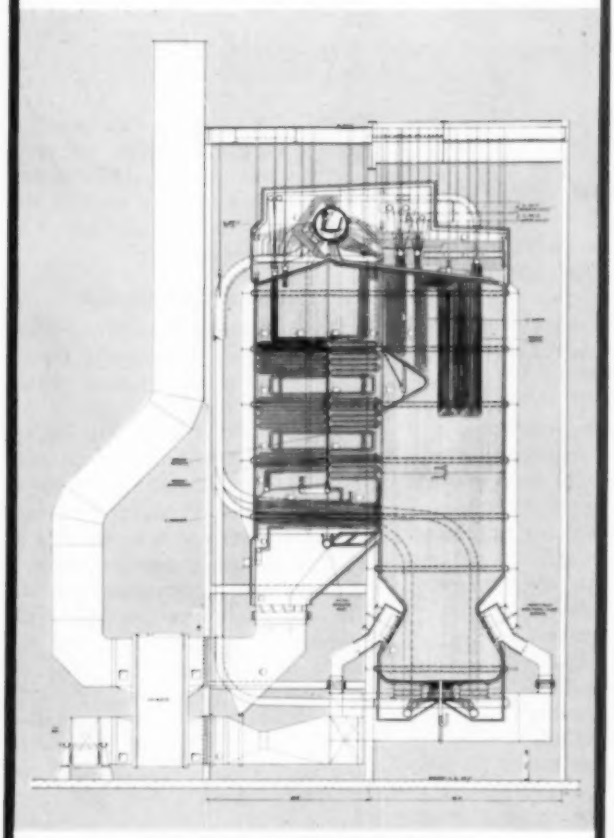
West Va. Chemicals Co.
One 175,000# Unit
Pulverized Coal

Phillipine Islands
Public Utility
One 430,000# Unit
Oil

RILEY DESIGNS, MANUFACTURES AND INSTALLS COMPLETE STEAM GENERATING UNITS AND FUEL BURNING EQUIPMENT FOR PUBLIC UTILITY AND INDUSTRIAL POWER AND HEATING PLANTS

public utilities are installing

FURNACE UNITS



Riley Reheat TURBO FURNACE Unit:
Louisiana Public Utility
Capacity: 1,550,000 lbs/hr. Pressure: 2125 psig design
Superheat and reheat temperatures: 1005 F
Fuels: Natural Gas, Future Oil, Pulverized Coal, Lignite, Delayed Coke, Fluid Coke.
20 Riley Directional Flame Burners
Pressurized Turbo Furnace

A survey of your plant by a consulting engineer could show ways of making surprising savings in your power costs.

BECAUSE . the TURBO FURNACE makes possible change-over from natural gas and oil to solid fuels firing with minimum of outage and minimum conversion cost . . at the same time it provides a superior, efficient means of firing gas or oil.

When conversion to solid fuels becomes economically advisable the only major expense is the addition of pulverizers. Riley Directional Flame Burners are already equipped with coal heads for easy, quick hook-up to pulverizers.

USES A WIDE RANGE OF FUELS

The method of firing and the high heat and high turbulence in the combustion zone makes possible the efficient and economical use of any fuel that is burned in suspension: gas, oil, all grades of coal, lignite, delayed cokes and fluid coke.

OFFERS MANY ADDED ECONOMIES

- Flyash disposal is eliminated by reinjecting flyash and converting it to slag.
- Minimum carbon loss, higher efficiency.
- Clean furnace — no soot or slag blowing is needed; a large percentage of ash is retained in combustion zone and furnace exit gas temperatures are exceptionally low.
- More uniformity of furnace temperature across superheater and reheater.
- Method of firing makes possible less overall height.
- One level burner operation.

REMOTE AND ELECTRONICALLY CONTROLLED FIRING

Complete automatic and remote firing controls with electronic safeguards are available for Riley Directional Flame Burners.

RILEY
Stoker Corporation
WORCESTER, MASSACHUSETTS

Sales Offices: Worcester, New York, Philadelphia, Buffalo, Pittsburgh, Cleveland, Detroit, Chicago, Cincinnati, Charlotte, New Orleans, Atlanta, St. Louis, Kansas City, St. Paul, Houston, Denver (Englewood), Salt Lake City, Los Angeles, San Francisco, Portland, Seattle.

more favorable to long valve life than the 2650 psi pressure drop in a conventional installation.

Various modifications of this arrangement can be made to reduce any unnecessary power losses. For instance, a shut-off arrangement can be incorporated in valve (B) so that whenever no spray-water is required (as at loads under 400,000 lb/hr), valve (B) would close.

Another modification would take advantage of the flow through orifice (3) and valve (B) at reduced loads to fulfill part of the recirculating by-pass function of orifice (1) and valve (A). If, for instance, the minimum flow recommended for these pumps were 150,000 lb/hr, the by-pass proper could be sized to handle 110,000 lb/hr only, since an additional 40,000 lb/hr would pass through the jumper line at total flows under 40,000 lb/hr (200,000 lb/hr per pump) when the spray-water is shut off.

One of the greatest attractions of this arrangement is that it can be incorporated into an existing installation which has been encountering difficulties from the point of view of regulating valve maintenance in the attemperator circuit for the reheater. This solution makes it possible to remedy the difficulties without having to modify the boiler feed pumps themselves or without the need of a costly installation of additional pumping equipment.

Emergency Air for Cooling Television Observation Window

A TELEVISION camera transmits a picture of the furnace interior to the control room of the new 500,000 lb per hour boiler at our Moore County Plant. This is a pressurized furnace in which a desirable minimum of observation doors are provided. Due to the arrangement of burners at each corner of the furnace, we have found this furnace observation television equipment to be almost indispensable as an operating aid.

Lens Damaged

Last summer the blower failed, which supplied cooling air to the air cooled observation window, mounted in the furnace roof, through which the camera scans the furnace. This permitted hot furnace gases to escape around the glass in the window and ruin the wide angle lens on the camera. In addition the image disector tube was damaged to the extent that it required replacement soon afterward. The total cost of this mishap was over $1,000.00.

We recently installed an air cooled observation window of new design together with a new centrifugal type blower to supply 300 cfm of air at approximately one (1) psi for cooling. An emergency source of air was desired to prevent future damage to the camera in the event of a blower failure.

A "stand-by" blower would give some protection if electrically interlocked, but would require check valves on the discharge of each blower and would thus require an appreciably higher discharge pressure from the blowers.

We considered tapping house service air into the system but found the house service compressor was rated at only 100 cfm and this tap would also require the installation of a check valve on the blower discharge.

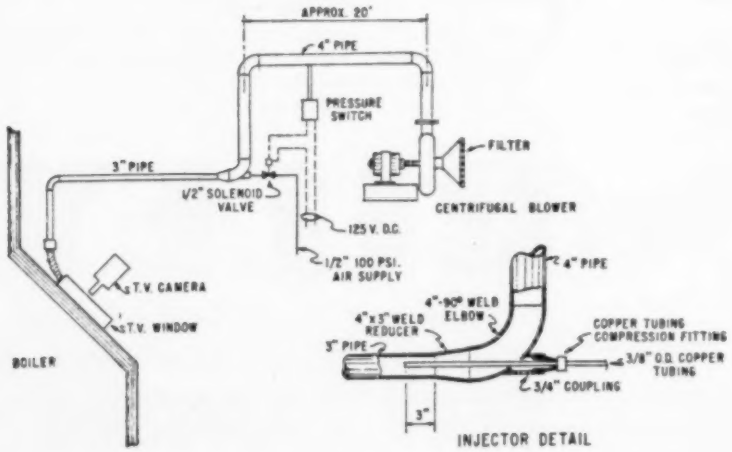
Economical Answer

We designed and built an injector into the low pressure air piping as shown in the sketch, which solved both these problems.

We use 75 cfm of 100 psi air to drive the injector which furnishes approximately 200 cfm of one (1) psi air to the cooling system. No check valve is required at the centrifugal blower because the injector induces its additional air through the blower and filter assembly. This also eliminated the need for an additional filter on the emergency system.

A pressure switch was installed on the low pressure piping between the centrifugal blower and the injector, which makes contact on low pressure to energize and open a solenoid valve in the 100 psi air supply to the injector.

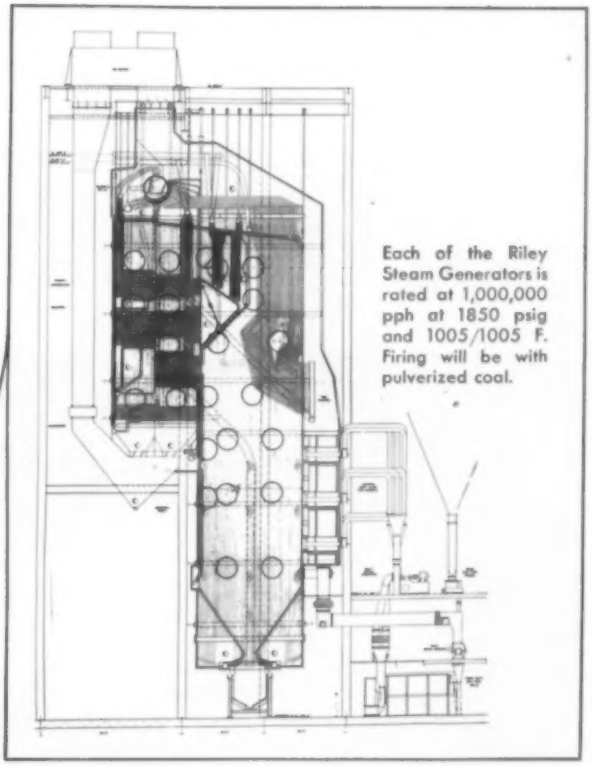
We have found this system to be a very satisfactory emergency stand-by source of air. It will supply air in the event of an interruption in the power supply to the blower or a blower failure. This installation saved us approximately $400.00, which it would have cost to install a stand-by blower and will prevent future damage to the television camera due to loss of cooling air.



INJECTOR DETAIL

By CLEON LIGON, Sr. Mechanical Engineer, Southwestern Public Service Company, Amarillo, Texas.

It's Vulcan Selective Sequence at New Albany Generating Station

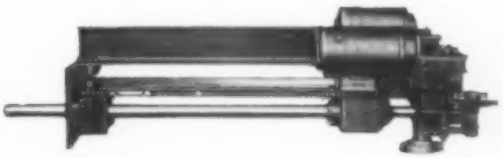


Each of the Riley Steam Generators is rated at 1,000,000 pph at 1850 psig and 1005/1005 F. Firing will be with pulverized coal.

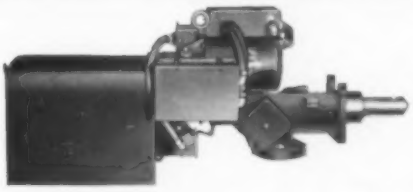
Boiler cleaning systems for Units 1 and 2 in the New Albany Station of Public Service Company of Indiana will be under Vulcan Selective-Sequence Control. Each of the two Riley Steam Generators will be equipped with a Vulcan Soot Blowing System which includes Long Retracts and Wall Deslaggers.

Selective-Sequence operation of the soot blowing system was chosen to give positive operation at proper intervals in precisely the sequence necessary for the most effective cleaning. Vulcan Long Retractable Soot Blowers with two motor operation assure maximum coverage with uniform cleaning of all surfaces. Vulcan Wall Deslaggers deliver maximum striking power to drive off slag, assuring high heat-transfer capacity and uniform control of superheat and reheat temperatures.

Modern soot blowing systems, with either automatic-sequential or selective-sequence control, can help keep your boilers operating at peak efficiency. Whether your boiler is power or process, large or small, investigate Vulcan Automatic Soot Blowing Systems for better cleaning results.



The Vulcan long retractable soot blowers will have electric drive and will blow with air.

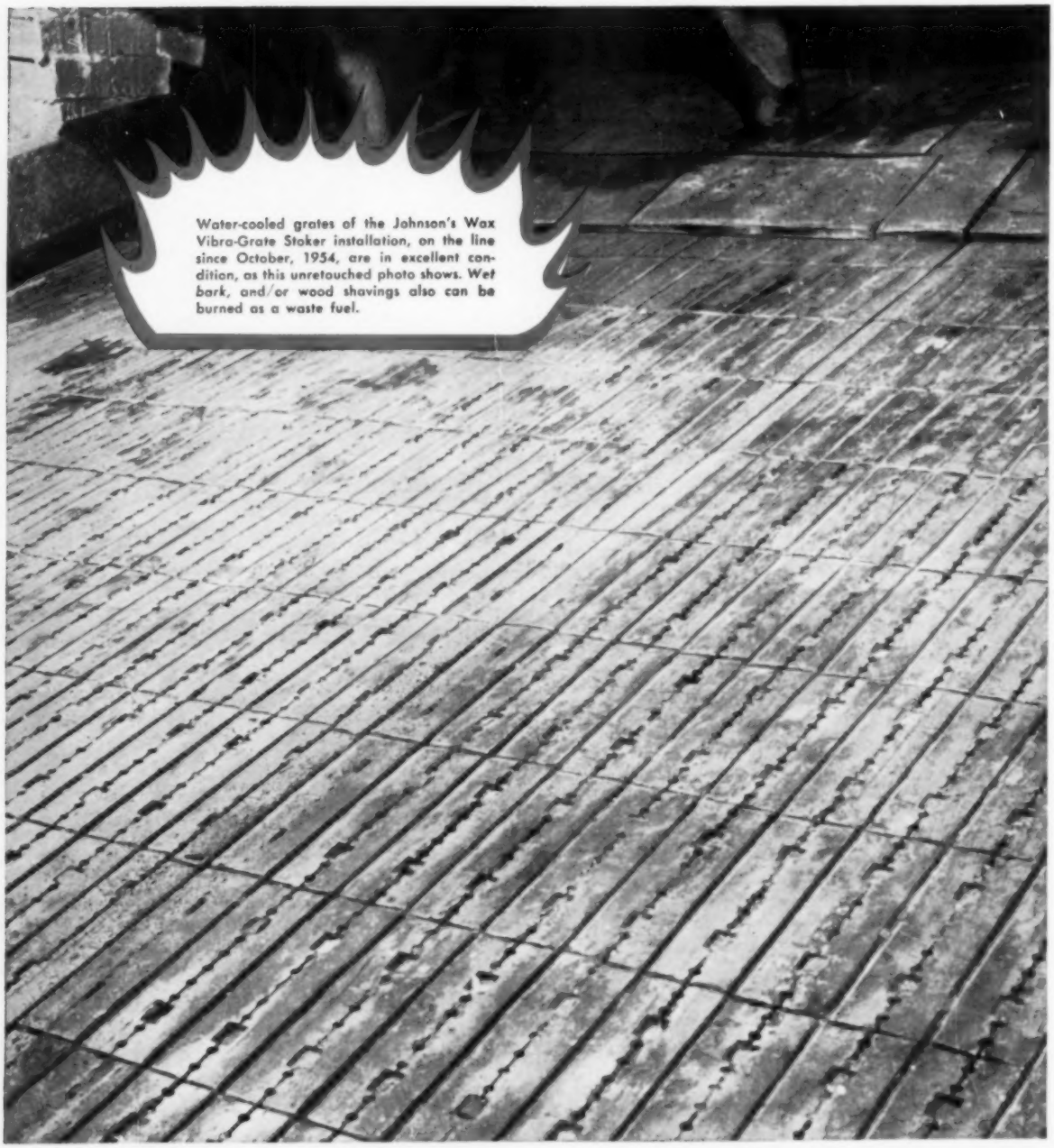


Full cleaning action is assured by the high striking power of Vulcan Wall Deslaggers.

COPES-VULCAN DIVISION
BLAW-KNOX COMPANY
ERIE 4, PENNSYLVANIA

50th Anniversary
BLAW-KNOX
1906-1956

PROVED PERFORMANCE SELLS EIGHT NEW AE



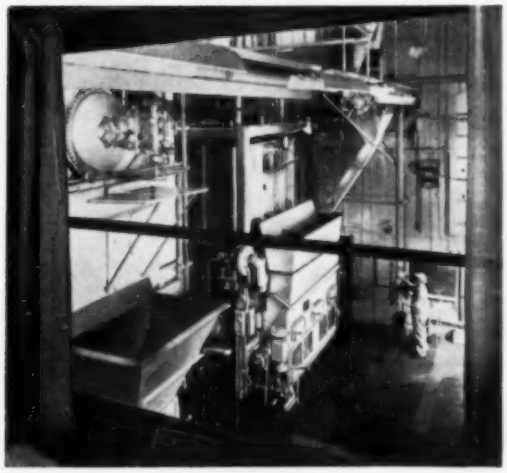
Water-cooled grates of the Johnson's Wax Vibra-Grate Stoker installation, on the line since October, 1954, are in excellent condition, as this unretouched photo shows. Wet bark, and/or wood shavings also can be burned as a waste fuel.

OVER 24 MONTHS VIBRA-GRATE STOKERS

Two full years of outstanding service from the Vibra-Grate stoker in the Racine, Wisconsin plant of S. C. Johnson & Son, Inc., manufacturers of Johnson's Wax, have resulted in eight new orders for Vibra-Grates from both public and private users.

A personal examination of the Johnson's Wax installation by technical experts of customer companies convinced them that all claims made for this outstanding stoker were modest compared with its performance records. Grates were in almost new condition, as the unretouched photograph shows – proof that Vibra-Grates can both deliver heat – and take it!

So, if you're thinking of adding a new power plant – or modernizing your present one, write for full details on the Vibra-Grate today.



First commercial installation of its kind in the U. S., the Vibra-Grate Stoker at Johnson's Wax burns low grade coal without smoke, needs no dust-collector, and is water-cooled for long life. Maintenance to date has been zero.

EIGHT AE ADVANTAGES MEAN MAXIMUM OPERATING EFFICIENCY FOR EIGHT NEW INSTALLATIONS

Manufactured by American Engineering Company, makers of the world-famous Taylor Stoker, modern Vibra-Grates provide cost-conscious power plant operators with eight special advantages:

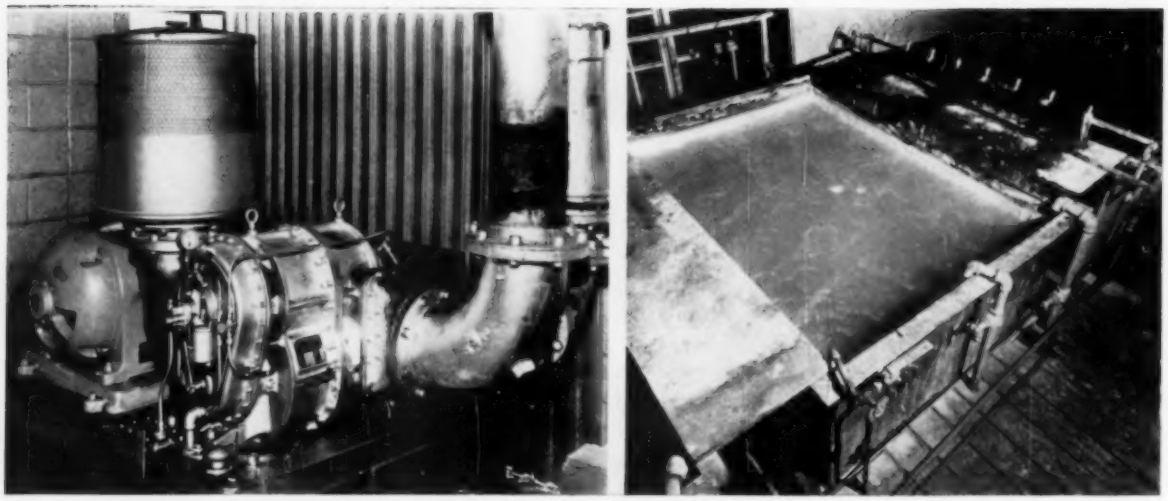
- Unusually effective air seals to insure high CO_2, even at very low ratings
- Freedom from smoke at both high and low steaming rates
- No need for costly dust collectors
- Satisfactory burning of both high and low volatile coals, as well as lignite
- Really effective air zoning from this stoker's modern type of grate; air divisions cannot become leaky and useless
- Minimum maintenance, because of the stoker's water-cooled grate
- High efficiency at all ratings
- Water-cooling protection when burning liquid or gaseous fuels

AMERICAN ENGINEERING COMPANY

DEPT. S-103, WHEATSHEAF LANE & SEPVIVA STREET, PHILADELPHIA 37, PA.

Canadian Subsidiaries: Affiliated Engineering Corporations, Ltd., Montreal, P.Q. . . . Bawden Industries Ltd., Toronto, Ont.

AE products are: Taylor, Perfect Spread and Vibra-Grate Stokers, Hele-Shaw and Hydramite Fluid Power, Lo-Hed Hoists, Lo-Hed Car Pullers, Marine Deck Auxiliaries.



This blower supplies the air needed to agitate tanks of caustic solutions at Reynolds Metals Co., Louisville plant. Air introduced through a perforated pipeline at the bottom of this 7 ft deep tank keeps the liquid well stirred.

Air Pressure Stirs Up Solutions

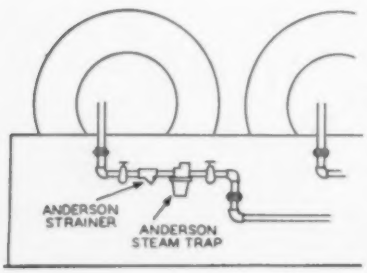
REYNOLDS Metals Co. uses air pressure at its South Ninth Street plant, Louisville, Ky., to stir caustic solutions and similar chemicals. The solutions are agitated in steel tanks approximately 7 ft deep by introducing compressed air at a pressure of around 10 psi through perforated pipelines near the bottom of each tank. The resulting bubbling keeps the liquids well stirred.

The air is supplied by an axial-flow "Standardaire" blower rated at 900 cfm, manufactured by the Read Standard Corp.

Air is taken in and discharged from the pockets that form between intermeshing male and female rotors during rotation. The two rotors operate with a clearance of a few thousandths of an inch but actually never touch; hence there is no friction wear nor any need for internal lubrication to contaminate the air stream. The blower is driven at 1,400 rpm by V-belt from a 75 hp electric motor, providing ample reserve power for increasing the pressure or the capacity.

New Trap Aids Slashing

THE ELMORE Corporation, Spindale, N. C., uses the following method of trapping slashers to prevent damage to the warp and to speed up production. Slashers on rayon, nylon and other filament yarns operate at low temperatures to prevent damage to the warp. A slasher frequently is stopped to repair ends (single strand of yarn). Then it is necessary to cut off the supply of steam and vent off remaining steam in the drums to hold the temperature down.



Because of this low temperature condition, during the periods of shutdowns, condensation forms in large quantities quickly. When the slasher is started back up the drums should come up to temperature quickly so that there is no lost production. This requires a steam trap that can drain off this large quantity of condensation in a very short time, in addition to venting the air out of the drum so that it can be replaced quickly with steam.

To do this job, Elmore replaced conventional inverted bucket traps with seven new combination Series B Heat-Kwik Steam Traps (the V. D. Anderson Company). These traps, unlike the single orifice traps, combine a thermostatic design with an inverted bucket and have two orifices for purging air and draining condensate.

Fast Acting

The thermostatic element handles large quantities of cold water on start-up and in addition vents large quantities of air. This function is automatically controlled by the temperature differential between air and steam. During periods of start-up, all the air is drained out of the Elmore slashers in a matter of seconds so that production can be started almost instantly.

New Revolutionary Steam Trap

One large capacity seat for all pressures!

New Sarco Thermodynamic steam trap. Sizes ⅜ to 1"... each body as small as a tee fitting! Capacity is determined, not by a bulky body, but by the effective orifice, valve action, pressure drop and condensate temperature.

1. Cuts trap inventory

With the revolutionary Sarco TD steam trap, you use exactly the same trap... with exactly the same large capacity seat... for all pressures 10-600 psi... for heavy, light or no condensate load. Sizes ⅜ to 1".

2. All pressures 10 to even 600 psi!

...without changes or adjustments. Self-adjusting. High pressure construction... at a low pressure trap price!

3. Operates perfectly when pressure fluctuates

Absolutely no effect even from 600 to 10 psi! No water seal to evaporate. No adjustments.

4. Widest capacity range

Same large capacity seat for 10 as for 600 psi. Pressures of incoming air and condensate INSTANTLY AND FULLY raises valve head (disc), permitting maximum discharge.

5. Operates equally well on all loads

The same Sarco TD trap for heavy, light or no condensate load. No prime to lose. No adjustments.

6. No oversizing worries

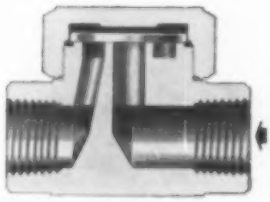
You can size the new Sarco TD steam trap for peak condensate loads... without risk of blowing steam on light loads... no prime to lose... no adjustments.

7. No steam leak required

...to operate the revolutionary Sarco TD steam trap (Pat. Pending). Closes tight against steam!

Convince yourself by 60-day trial... use coupon

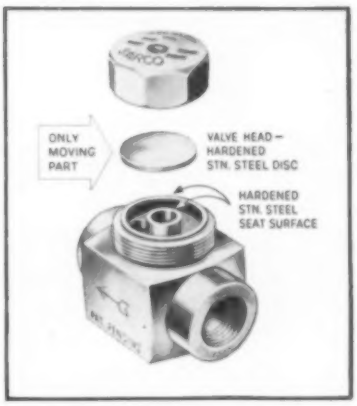
SARCO



Trouble-free design

Here is a trap so simple, it doesn't even have a valve closing mechanism. The kinetic energy of steam closes the valve. ONLY the new Sarco TD uses this operating principle.

No mechanism parts to wear or stick. No narrow channels to choke. No gaskets to leak.



Maintenance practically eliminated

The all-stainless steel Sarco TD has only 3 parts... cap, disc and body. Only moving part is a hardened SOLID stainless steel disc, practically wear-proof.

SARCO COMPANY, INC.
Empire State Bldg., N. Y. 1, N. Y.

Please send me Sarco TD Steam Trap and strainer for 60-day trial.
Size_____ For use on_____

_____

Name_____

Firm_____

Address_____

City_____ State_____

2101-B

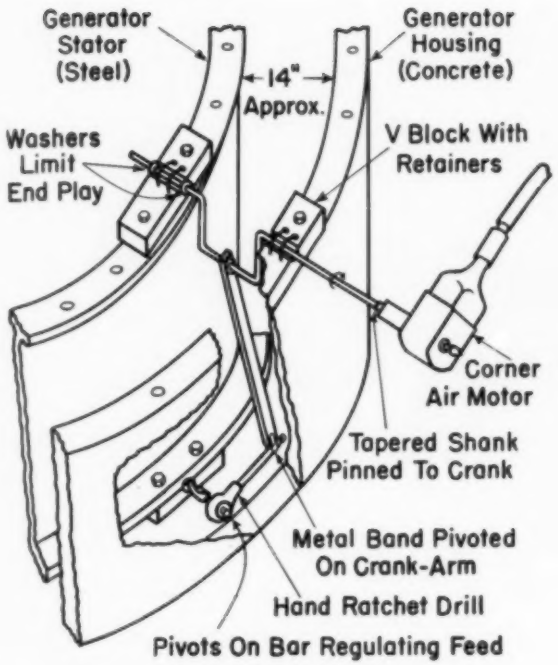
Drilling Holes in Tough Positions

WHEN HOLES have to be drilled where customary tools or methods would be impracticable, expedients have to be devised. Such a situation arose when it was necessary to re-dowel the stator of a vertical-shaft generator so it would be held securely with a uniform air gap. The space between the stator and the concrete housing was only 14-in., barely enough for a man and his helper to lie on their sides to operate and feed even a hand-ratchet drill.

To handle this problem, a small hand-ratchet drill with a short bit was arranged as illustrated for ratchetting by a crank-arm operated by a corner-type air motor. Space permitted a man to reach down inside the housing to position the drill with its tapered shank pivoting on an "old man" or bar used to feed the drill.

More than 30 man-hours were saved in drilling and reaming the eight 1-in. dowel holes 3-in. deep by this method. The idea may be applied wherever it is necessary to convert rotary motion into oscillatory motion in cramped space.

By P. B. BLIZZARD, Mechanical Engineer, and C. C. JACKSON, Maintenance Mechanic, Kanawha Valley Power Co., Charleston, West Virginia.



Air-motor operated crank-arm ratchets drill in cramped space.

Chemical Feed Method

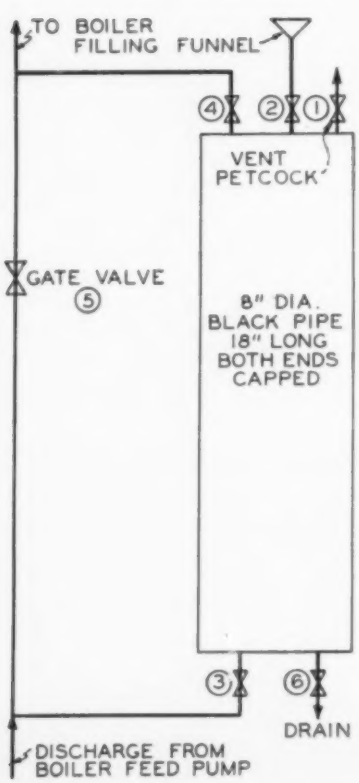


Diagram of filling method. Valve No. 5 is open except when adding chemicals. All other valves are normally closed.

WE HAVE recently experienced trouble with our boiler feedwater line where it enters the boiler. Previously we added chemicals directly into a low pressure return tank which was in turn emptied into a high pressure tank where the necessary make - up water was added.

We did not realize that a reaction was taking place in this feedwater tank and also in the feed line from the tank through our pump and into the boiler, until our injector ceased to work during tests. On removal, the pipe nipple where it enters the boiler showed a 75% reduction in size due to build-up of precipitating chemicals.

This condition is being eliminated by the use of a 3-gallon tank in which our chemicals are added. Then by means of valves this entire tank can be emptied into the boiler during one operation of the boiler feed pump.

The accompanying sketch further explains this set-up. To Charge: Open (1) and (2) with (3) and (4) closed. Add chemical solution and water to fill tank: Close (1) and (2); Open (3) and (4). Close (5) for several minutes' operation of feed pump or until tank is empty of solution. Then open (5), close (3) and (4), open (1) and (6) to drain, and then close (1) and (6).

By IRA M. SCHEY, JR., Lenoir Hosiery Mills, Inc., Lenoir, N. C.

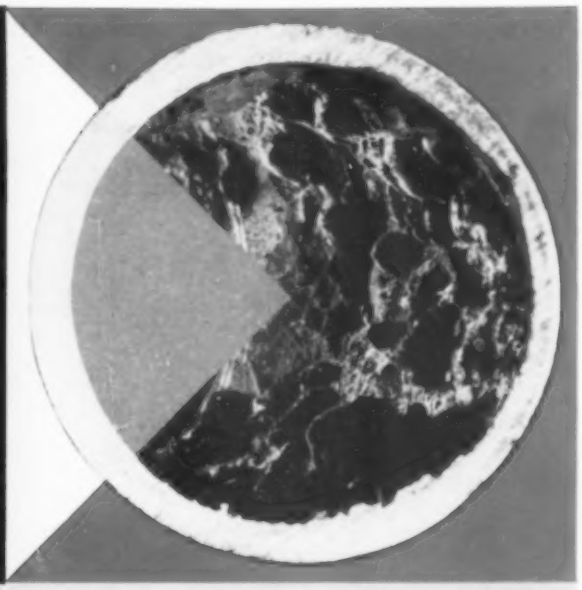
Metallic Lubricant

CONSIDERABLE amounts of overtime were required in a Delaware asphalt plant which had 62 lubrication points on their elevators. Every night it was necessary to lubricate to make ready for the next day's operation.

Using Molub-Alloy industrial metallic lubricant (Imperial Oil & Grease Co.) the Plant Superintendent reports that his men now lubricate every six working days. Benefits include reduction in breakdown, less power consumption and labor savings.

sure cures* for corrosion

IN BOILERS · STEAM LINES
TRAPS · HEATERS
CONDENSATE RETURNS



Anderson ALKASTEEM*

A highly-developed liquid amine which effectively neutralizes carbon dioxide and increases the pH of the condensate. ALKASTEEM has proved its worth over many years in hundreds of systems.

Anderson OX-GEM*

An extremely efficient sodium sulfite product in dry form which reacts with dissolved oxygen in boiler water to prevent corrosion caused by this gas.

Many a system has been wrecked by corrosion at the water line and above it in boilers, steam lines, steam traps, valves, unit heaters and return condensate lines. The most common causes are carbon dioxide and oxygen in the water.

Hundreds of engineers rely on Anderson ALKASTEEM and OX-GEM and the counsel of Anderson's field representatives to check these corrosive gases and prolong the life of their equipment.

There is an Anderson representative in your area who has broad experience with every kind of water problem. He will gladly analyze your water and prescribe the proper treatment to protect your equipment against costly corrosion, rust and scale. His services cost you nothing. They can save you much.

Write, Wire or Phone

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.
Box 1424 • MACON, GEORGIA • Phone 5-0466

The Booming South and Southwest . . .

New Plants — Expansions

√ Manufacturing Plants
√ Utility Plants
√ Large Service Plants

Highlights for November, 1956

South Atlantic

$6,000,000 **General Electric Co.** electronic equipment plant underway at **Largo, Fla.** with completion expected by first of year . . . Extruding plant being planned by **Jaloseal Corp.** at **Ft. Lauderdale, Fla.** . . . **Lenaham Aluminum Window Co.** & **American Aluminum Window Co.** planning location of a multi-million dollar aluminum center on an 11 acre site in **Jacksonville, Fla.** . . . $42,000,000 jet engine manufacturing plant planned by United Aircraft Corp.'s **Pratt & Whitney Division** at **Palm Beach, Fla.** . . . **Milton-Roy Co.** to build an automation appliances plant on a 70 acre plot in **St. Petersburg, Fla.** . . . 41,000 sq ft plant for **International Shipbuilding Corp.** to be erected in **Miami, Fla.** — to cost $350,000 - $500,000 . . . $27,000,000 **Schlitz Brewery** anticipated for **Tampa, Fla.**

Multi-million dollar, 3 year expansion program planned for **Champion Paper & Fibre Co.** of **Canton, N. C.** . . . $1,250,000 exchange plant underway for **Southern Bell Telephone & Telegraph Co.** in **Charlotte, N. C.** . . . 80,000 sq ft warehouse and office structure, costing $400,000, will be erected in **Greensboro, N. C.** for **Dillard Paper Co.** . . . $150,000 **Pepsi-Cola Bottling Co.** plant underway in **Henderson, N. C.** . . . $50,000,000 pulp and paper plant proposed for **Union Bag-Camp Paper Corp.** at **New Bern, N. C.** . . . **Electric Motor & Repair Co.** planning $350,000 plant on a 10 acre site in **Raleigh, N. C.** . . . 59 acre site in **Wilson, N. C.** will be the location of the multi-million dollar meat packing plant for **Swift & Co.** . . . **Armour & Co.** to erect $750,000 meat products sales and storage center in **Charlotte, N. C.**

620,000 sq ft **Cone Mills** finishing plant nearing completion in **Carlisle, S. C.** . . . **Claussen Bakery Co.** constructing $1,500,000 plant on a 4½ acre site in **Charleston, S. C.** . . . Underway in **Leesville, S. C.** is the 50,000 sq ft, $500,000 plant for **J. B. Martin Co.** which will manufacture transparent velvet.

$2,000,000 furniture manufacturing plant planned for **Bassett Industries, Inc.** in **Bassett, Va.**—to be called Bassett Table Co. . . . **Dow Chemical Co.** constructing a $15,000,000 synthetic fiber plant in **Newport News, Va.** . . . $1,000,000 expansion underway for **Southern Dairies, Inc.** at **Norfolk, Va.** which will increase production by 60% . . . **Halifax Mills** increasing its plant by 50,000 sq ft in **Halifax, Va.**

$1,500,000 expansion set for **Goodrich-Gulf Chemicals, Inc.'s** synthetic rubber plant in **Institute, W. Va.** — includes a boiler plant.

East South Central

Calumet & Hecla's **Wolverine Tube Division** planning 90,000 sq ft addition to its **Decatur, Ala.** plant . . . $500,000 plant for **National Pool Equipment Co.** underway in **Florence, Ala.** . . . November completion anticipated for **City Produce Co.'s** $169,000 poultry processing plant — company moving from Huntsville to **Guntersville, Ala.** . . . Plans underway for $1,750,000 sewage treatment plant for **Huntsville, Ala.** . . . Early 1957 will see the construction of **Ideal Baking Co.'s** $300,000 plant in **Huntsville, Ala.** . . . $7,000,000 magnesium plant will be erected on a 480 acre tract in **Selma, Ala.** for **Alabama Metallurgical Corp.** . . . Underway at **Marion, Ala.** is the $250,000 **Marion Lingerie, Inc.** plant . . . Multi-million dollar kraft pulp and paper mill planned for **Tennessee River Pulp & Paper Co.** in **Sheffield, Ala.**

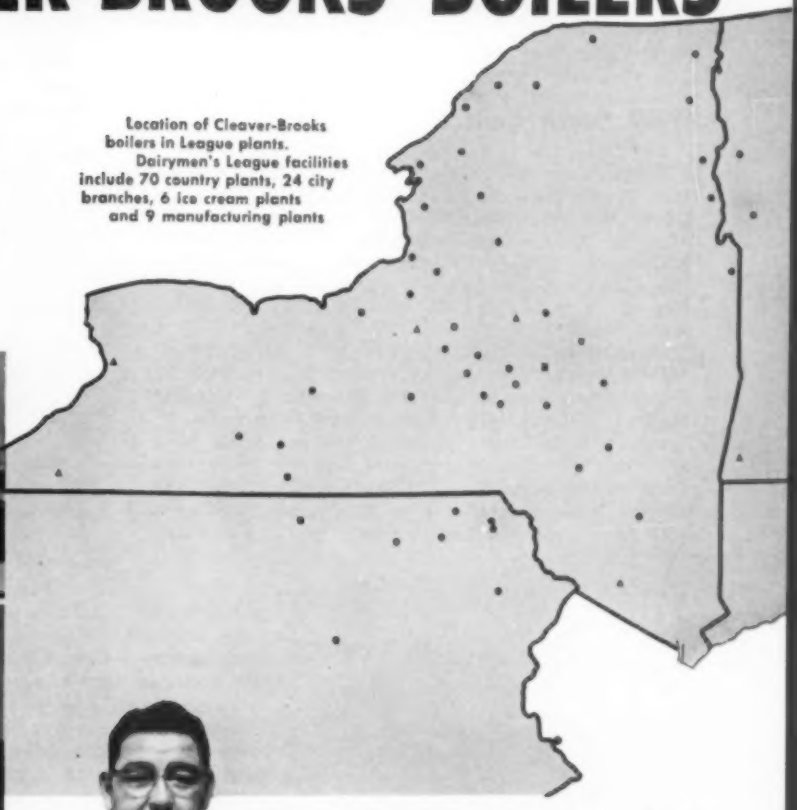
$900,000 ceramic tile plant planned for **Misceramic Tile Co.** on a 10 acre site in **Brookhaven, Miss.** . . . **Columbus, Miss.** will see early 1959 completion of the $30,000,000 plant for **Mississippi Pulp & Paper Co.** . . . **Dixie Aluminum Tube Co.** planning $400,000 aluminum products plant in **Hattiesburg, Miss.** . . . December 1 operation scheduled for $125,000 hosiery mill for **Wayne Knitting Mills** in **Kosciusko, Miss.** . . . $14,000,000 expansion planned for **Masonite Corp.'s** wallboard plant in **Laurel, Miss.** . . . Multi-million dollar addition underway in

These highlights briefed from SPI's SOUTHERN INDUSTRIAL NEWS SERVICE, a monthly publication issued exclusively to SPI advertisers and their representatives through the South and Southwest.

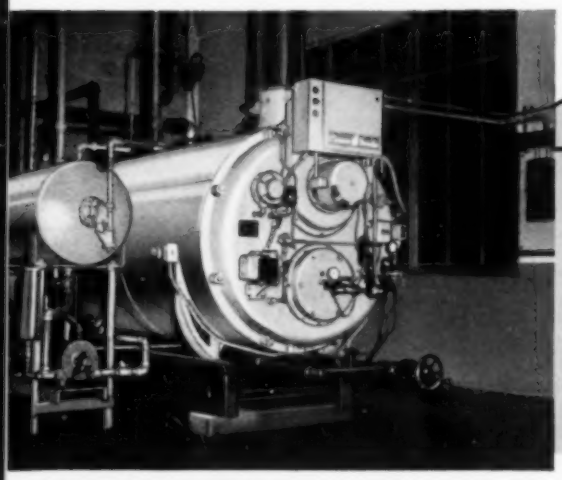
One of America's largest and leading
dairy associations uses

69 CLEAVER-BROOKS BOILERS

Special note to dairymen:
See Cleaver-Brooks boiler exhibit
at the Dairy Show,
ATLANTIC CITY
Oct. 29 — Nov. 3.
Booth W.50



Location of Cleaver-Brooks boilers in League plants. Dairymen's League facilities include 70 country plants, 24 city branches, 6 ice cream plants and 9 manufacturing plants



MILTON, PA. — This country plant is supplied with quick, dry steam from a Cleaver-Brooks 60 hp light-oil fired CB boiler.

"Our 69 Cleaver-Brooks boilers are a key part of our production — their unusually high efficiency, sanitary, clean operation have helped us grow and prosper", says Ken Dodge, staff engineer for Dairymen's League Cooperative Association.

"Maintenance is low. We average far less than one service call per boiler per year," he adds.

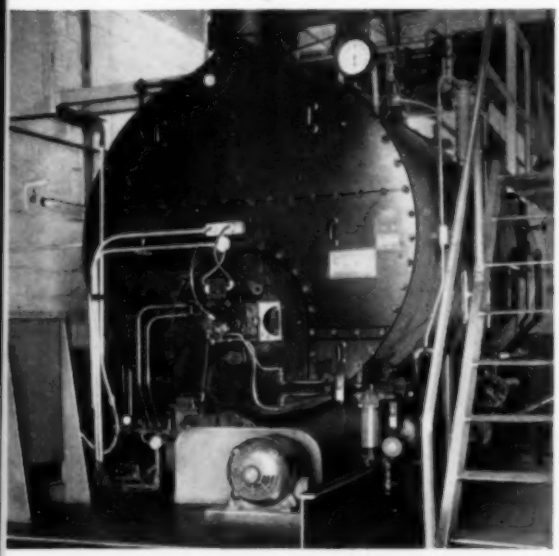
Dairymen's League Cooperative Association, serving 25,000 dairy farmers and thousands of consumers in New York, Pennsylvania and New Jersey, has been a steady user of Cleaver-Brooks boilers for 20 years.

Like any dairy company, the League finds steam essential for the production of quality dairy products. Their boilers are the work horses of their plants — supplying steam for pasteurizing, heating, cleaning and processing.

And Cleaver-Brooks boilers, with their exclusive four-pass, forced draft design and clean, quiet operation are especially suited to dairy plant operation.

Famous dairies the country over are profiting with the many advantages of Cleaver-Brooks boilers, available in a complete line. You can select from 110 models in 18 boiler sizes, 15 through 600 hp . . . oil, gas and combination oil and gas fired.

For more information contact your nearby Cleaver-Brooks representative. Or write Cleaver-Brooks Company, Dept. M, 305 E. Keefe Avenue, Milwaukee 12, Wis. Cable Address: CLEBRO — Milwaukee — all codes.



UTICA, N.Y. — In this city plant a 250 hp LR heavy-oil fired boiler provides all steam for pasteurizing, cleaning, heating and processing.

Cleaver Brooks

ORIGINATORS OF THE SELF-CONTAINED BOILER

Natchez, Miss. for **Johns-Manville Corp.'s** plant for processing hardwood . . . $150,000 plant will be constructed in **Maben, Miss.** for **Monte Glove Co.** . . . **Wells-Lamont Glove Factory** in **Philadelphia, Miss.** expanding to the sum of $140,000.

General Electric Co. planning $2,000,000 fractional horsepower motor plant in **Murfreesboro, Tenn.** . . . $1,500,000 packing plant underway in **Union City, Tenn.** for **Reelfoot Packing Co.**

West South Central

January 1 is completion date for **Missouri Charcoal Fuel Corp.'s** plant for producing charcoal briquettes at **Cotter, Ark.** . . . $500,000 flake board manufacturing plant for **United Wood Corp.** nearing completion in **West Memphis, Ark.** . . . $2,000,000 expansion of **Ideal Cement Co.** to be underway by late November in **Okay, Ark.**

1957 completion scheduled for **Ethyl Corp.'s** multi-million dollar vinyl chloride monomer plant in **Baton Rouge, La.** . . . 5 year, $1,500,000 expansion program planned for **Lane Cotton Mills** in **New Orleans, La.** . . . Construction to begin the first of the year on the $550,000 oak flooring plant for **First Lumber & Chemical Corp.** in **Opelousas, La.** . . . Multi-million dollar plant addition planned for **Universal Oil Products** in **Shreveport, La.** . . . **International Paper Co.** planning $2,300,000 expansion in **Springhill, La.** . . . Majority of $10,000,000 program of **Commercial Solvents Corp.** to be spent expanding production facilities for methanol and petrochemical derivatives at the **Sterlington, La.** plant.

$10,000,000 industrial plant to be constructed by **Fansteel Metallurgical Corp.** on a 200 acre tract in **Muskogee, Okla.** . . . Underway for **Webster Engineering Co.** is $325,000 plant and office building at Tulsa, Okla.

Steck Co. building $1,300,000 manufacturing plant in **Austin, Tex.** . . . $1,500,000 installation underway for **Shea Chemical Corp.** in **Dallas, Tex.** . . . **Johns-Manville Corp.** erecting Transite asbestos-cement pipe plant in **Denison, Tex.** — part of $40,000,000 expansion program . . . $2,500,000 expansion of **Municipal Power & Light Co.** underway in **Lubbock, Tex.** . . . **Monsanto Chemical Co.** planning $1,000,000 expansion in **Texas City, Tex.**

Kansas & Missouri

$500,000 chemical plant underway for **Procter & Gamble Mfg. Co.** in **Kansas City, Kans.** . . . **Gilmore Mfg. Co.** moving in November from Osborn to 5,000 sq ft building in **Clay Center, Kans.**

32,000 sq ft building underway for **Juvenile Shoe Corp.** in **Aurora, Mo.** — part of $250,000 expansion program . . . **Plaza Craft Boat** planning a manufacturing plant in **Dixon, Mo.**

FUTURE EVENTS of Engineering Interest

Nov. 1-2: Fifth Annual Instrumentation Conference, School of Engineering, **Louisiana Polytechnic Institute, Ruston, La.** Will consist of technical sessions and exhibits of new equipment in instrumentation and process control. Virgil Orr, Publicity Chairman, 5th Annual Instr. Conf., La. Polytechnic Institute, School of Engineering, Ruston, La.

Nov. 8-9: Southeastern Region Meeting, **National Association of Corrosion Engineers, Charlotte, N. C.** A. B. Campbell, Executive Secretary, NACE, 1061 M & M Building, Houston 2, Tex.

Nov. 26-30: Third International Automation Exposition, Trade Show Building, 500 Eighth Ave., **New York.** Clinics on: electronic computers, process automation, machine tool automation, office automation, automatic materials handling (conveyors), servomechanisms, electromechanical components and electronic components. Harrison Gilmer, 908 Keystone Building, Pittsburgh 22, Pa.

Nov. 26-30, 1956: 22nd National Exposition of Power & Mechanical Engineering in **New York City's** new **Coliseum.** Covers power production, its use, new techniques, economies, and atomic energy; under auspices of ASME; Management—E. K. Stevens, Pres. International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Nov. 30: Panhandle-Plains Regional Meeting, **Natural Gasoline Association of America,** Herring Hotel, **Amarillo, Texas.** William F. Lowe, 421 Kennedy Bldg., Tulsa 3, Okla.

Jan. 28-31: Plant Maintenance & Engineering Show, Public Auditorium, **Cleveland, Ohio.** 400 companies to participate in the show, displaying 5,000 pieces of equipment and accessory products in 278 categories. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Feb. 3-5: 26th Annual Mid-Winter Conference, Public Utility Buyers' Group, **National Association of Purchasing Agents,** The Brown Hotel, **Louisville, Ky.** L. Glen Wiseley, Chairman, Public Utility Buyers' Group, National Association of Purchasing Agents, Michigan Consolidated Gas Co., 415 Clifford St., Detroit 26, Mich.

Feb. 25-Mar. 1: 13th International Heating & Air-Conditioning Exposition, **American Society of Heating & Air-Conditioning Engineers,** International Amphitheatre, **Chicago, Ill.** E. K. Stevens, President, International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Mar. 3-5: Southern Safety Conference & Exposition, John Marshall Hotel, **Richmond, Va.** 14 Southern states provide exhibit of safety items and will give 14 sectional programs on specific safety subjects. W. L. Groth, Executive Director, Box 8927, Richmond 25, Va.

NEW SPI READER SERVICE

FOR THE convenience of engineering personnel in Southern manufacturing, power, and large service plants, Manufacturers' Agents serving SPI advertisers in this issue are tabulated on pages 103-105.

Equipment . . . Supplies . . . Methods

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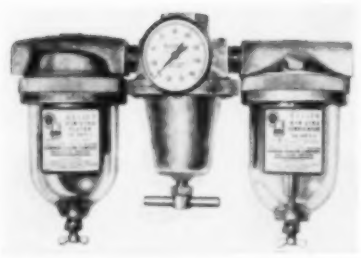
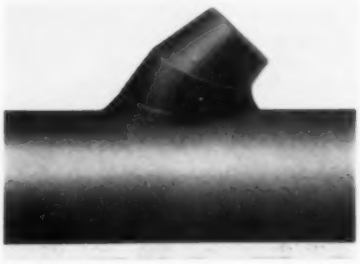


Air Line Lubricator

L-1 A new air line filter-lubricator, announced by the **Keller Tool Division,** Gardner-Denver Company, Grand Haven, Michigan, drains from the bottom without removing the bowl. Simply open the ¼" bottom bowl fittings for fast cleaning of the filter and lubricator.

The pressure regulator operates in an inverted position to permit a more compact, space-saving installation that can be designed into any air-powered equipment.

Keller Tool Filter-Regulator-Lubricator is available in any combination or as individual units for ⅜", ½" or ¾" compressed air line.



Welding Pipe Fitting

L-2 The Welding Fittings Division, **Bonney Forge & Tool Works,** 740 Meadow St., Allentown, Pa., has announced a unique branch welding pipe fitting for constructing angular branch connections with a full penetration weld.

Bonney "elbolets" are used for making 45° connections for directional flow and instrument connections, and for connections into elbows for instruments, drips, and hangar and support connections. Elbolets are available through stocking distributors of Bonney Weldolets and Thredolets.

Synthetic Lubricant for Air Compressors

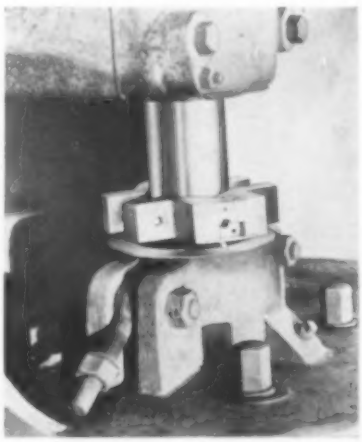
L-3 A synthetic lubricant for air compressors which minimizes explosions and receiver fires as well as carbon deposits on exhaust valves and air system piping has been announced by **Monsanto Chemical Company's** Organic Chemicals Division, 1700 S. Second St., St. Louis 4, Missouri.

Trademarked Pydraul AC, the lubricant is described as a fire-resistant fluid equivalent in lubricity to a premium grade lube oil. Quite similar in its properties to the company's other Pydraul fire-resistant fluids, it is reportedly unique in its marked ability to reduce carbon deposition, thus offering important maintenance savings in addition to a wide safety margin in compressed air systems.

Fires and explosions in such systems are not uncommon and can be hazardous to personnel and very destructive to property. Although no single explanation exists for the cause of these occurrences, it is generally agreed that they involve combustible films or mists of petroleum-based lubricants or their residues.

Pydraul AC is the result of five years of experimentation with synthetic lubricants by air compressor operators, particularly in petroleum refineries, gas pumping stations, power generating plants and other critical industries. It has been tested and proved in hundreds of such compressors by more than 30 major companies, Monsanto said.

Conversion of compressors from petroleum lubricants to Pydraul AC is simple, according to Monsanto's announcement. Splash - lubricated compressors need only be cleaned of their petroleum deposits before installing the new fluid. Separate force-feed cylinder lubricators can be converted with modification kits available from major lubricator manufacturers.



Mechanical Seal Installation Tool

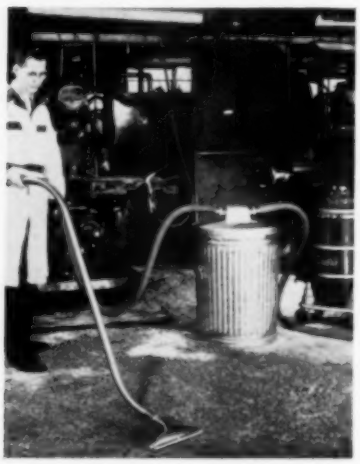
L-4 A new precision hand tool to prepare pump stuffing-boxes for mechanical seal installation is announced by **Byron Jackson Pumps, Inc.,** Box 2017A, Los Angeles 54, Calif. This BJ Stuffingbox Refacing Tool prepares a smooth gasket surface on the stuffingbox end to assure proper mechanical seal performance.

Consisting of a tool bit and holder, the tool machines the stuffingbox end at right angles to the shaft axis. The tool bit holder mounts on the shaft with the tool bit against the stuffingbox end. The bit is adjusted to the bore and is worked outward

by turning the shaft with a Stillson or strap wrench.

Bryon Jackson engineers emphasize that "a mechanical seal, properly installed, eliminates stuffingbox repacking and maintenance and solves problems of leakage on most pumping services. One of the keys to proper installation is a smooth stuffingbox end machined at right angles to the shaft axis. With this new refacing tool the user can reface and install a mechanical seal quickly, easily and inexpensively."

The tool is available in three standard sizes to accommodate shaft sizes from ¾ to 3 inches.



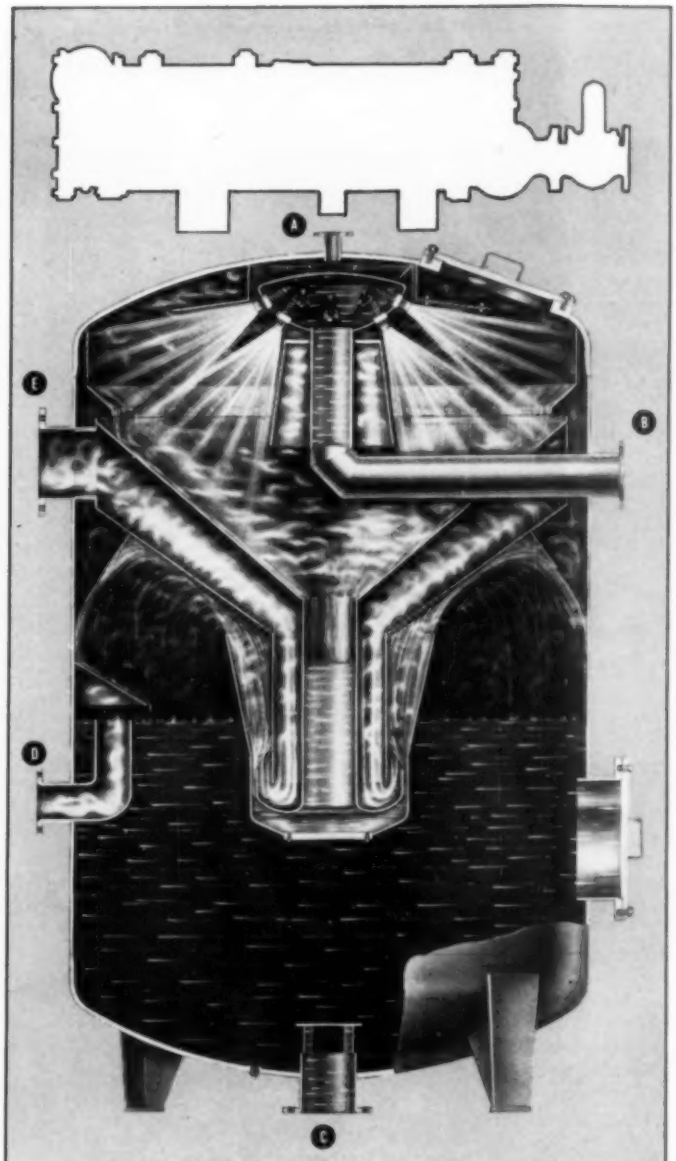
Vacuum Cleaner Adapter for Large Volume Work

L-5 A new vacuum cleaner adapter for use where an extra large volume of material must be picked up has been developed by **Clarke Sanding Machine Company**, 30 E. Clay Ave., Muskegon, Michigan. It may be used in combination with any make portable heavy duty vacuum cleaner having 1½ in. diameter hose.

The Clarke Xtra Tank Adapter fits any 30 gallon or smaller ash can or drum and speeds up work drastically reducing down-time for tank emptying stops.

The unit has dozens of applications where additional tank capacity is required — in large volume metal recovery, furnace and boiler cleaning, etc. Any number of drums may be employed and quickly and easily interchanged to further speed up the work.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17



Full-contact deaerator needs no external vent condenser (white outline). The full-contact design effectively concentrates the vent-mixture inside the deaerator shell.

A Vent to atmosphere
B Water inlet
C Pump suction connection
D Overflow connection
E Steam inlet

WORTHINGTON

Now! Do away with deaerator maintenance

Here's a modern deaerator that eliminates most service problems because it has no vent condenser.

Virtually eliminates maintenance. Crammed up against the ceiling, vent condensers are difficult to inspect and clean. With a Worthington full-contact deaerator you eliminate this trouble and expense. For plants that normally operate around the clock, shutdown for deaerator maintenance is rarely necessary.

The carefully proportioned displacement flow path provided in the full-contact design concentrates the vent mixture by direct contact inside the deaerator shell. The vent condenser is no longer necessary.

Saves space. Headroom required by the deaerator may be cut by several feet—an important consideration in today's modern power plants where space is at a premium.

High efficiency. Like all Worthington deaerators, the full-contact unit is highly efficient at light as well as full load, as confirmed by numerous field tests.

Full-contact deaerators in various shell arrangements are available in capacities from 2,000 to 3,000,000 pounds per hour. Bulletin W-210-B32 has complete details. Incidentally, for the small power plant, Worthington builds a line of low-headroom deaerators that eliminate expensive elevated construction. For details, write to Section S66, Worthington Corporation, Steam Power Dept., Harrison, N. J. In Canada: Worthington (Canada) 1955, Ltd., Toronto, Ont. S-66

Equipment, Supplies & Methods (Continued)

Plastic Conveyor Belts

L-6 "Permagloss" conveyor belts made with du Pont's "Mylar" polyester film are being distributed by the **Mohawk Supply Company,** Commercial Trust Building, Philadelphia 2, Pa. Applications include food processing, tobacco processing, rubber manufacturing and chemical applications where the advantages of strength and good release properties are desired.

Fabricated by joining two sheets of du Pont's "Mylar" polyester film with a special white adhesive, the material is strong, smooth, flexible, crackproof, non-absorbent, immune to attack by oils and greases, stable under temperature and humidity changes and is a good heat transfer agent.

The belting can be easily installed. The lamination of two 3-mil sheets of transparent "Mylar" is left open for a few inches at both ends. When installed, the belt is fitted exactly to the conveyor and the two dovetailed ends sealed with the adhesive and brush provided. Pressure sensitive tape with a backing of "Mylar" completes the smooth finish that is not affected by scraping or cleaning. Cost is approximately $1.50 per foot for 30" width belting.

The resistance of "Mylar" to attack by most acids, alkalis, and other chemicals is important to other food processors. Meat packers report that initial tests show that this belting may offer longer life because of its resistance to animal fats and grease.

Processors of citrus fruits have hopes that this material will reduce the high replacement rate of present belting. Here, a belt needs to be strong and immune to attack by citrus acids. A frozen food manufacturer believes belting of "Mylar" will make possible a continuous production line involving freezing of food products at temperatures of —40 F.

Its low weight of 0.04 lb/sq ft makes belting of "Mylar" only a twelfth as heavy as the lightest woven material. This means less power required to drive equipment, and reduced strain on machinery. Its uniform weight and thickness has enabled one machinery manufacturer to install a device under the belt which automatically weighs small amounts of chemicals.

Control Valves for Air Operation to 250 Psi

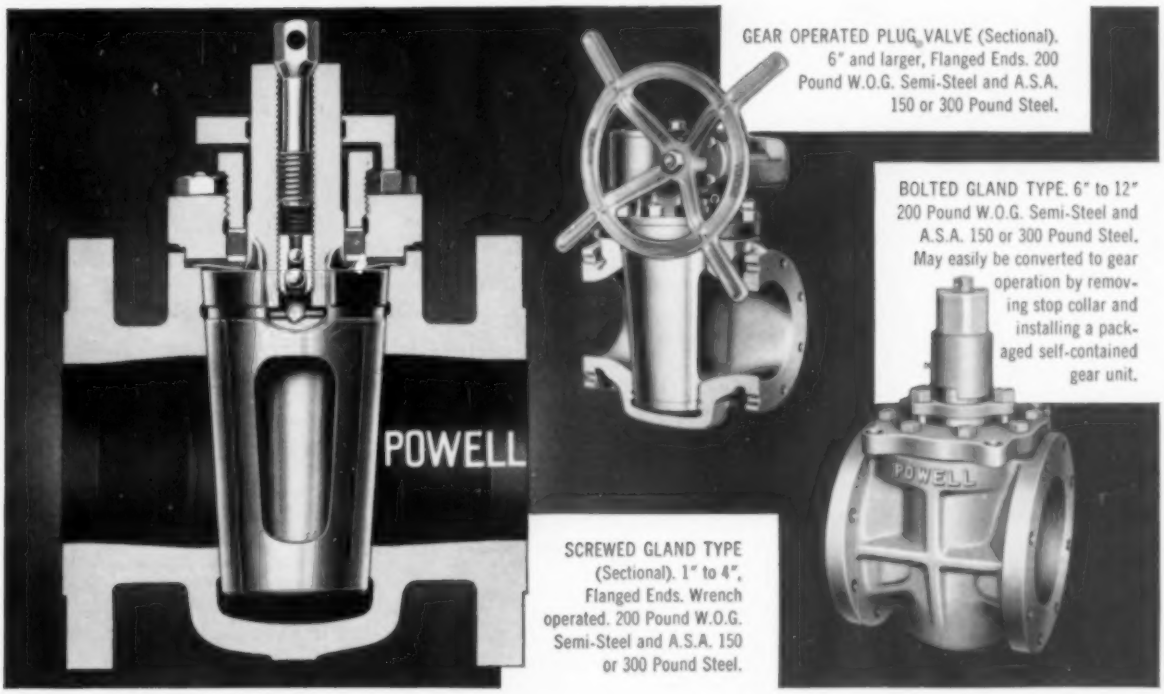
L-7 **Hanna Engineering Works,** 1765 North Elston Ave., Chicago 22, Ill., has announced the development of a new series of solenoid and master air valves used for three and four way air operation, and available in sizes ¼", ⅜", ½", ¾" and 1".

Hanna Flo-Line Valves are used for controlling air cylinders and other air operated devices. Dependable performance, safe operation, easy maintenance and clean cut design are advantages offered.

Dependable service is assured by seals which eliminate damage from external grit and moisture. Design features, application data, etc., are featured in Bulletin No. 260.

POWELL

Lubricated Plug VALVES



GEAR OPERATED PLUG VALVE (Sectional). 6" and larger, Flanged Ends. 200 Pound W.O.G. Semi-Steel and A.S.A. 150 or 300 Pound Steel.

BOLTED GLAND TYPE. 6" to 12" 200 Pound W.O.G. Semi-Steel and A.S.A. 150 or 300 Pound Steel. May easily be converted to gear operation by removing stop collar and installing a packaged self-contained gear unit.

SCREWED GLAND TYPE (Sectional). 1" to 4", Flanged Ends. Wrench operated. 200 Pound W.O.G. Semi-Steel and A.S.A. 150 or 300 Pound Steel.

Powell Lubricated Plug Valves maintain our 110-year tradition of quality and precision. Only the finest available materials are used. And painstaking quality control is rigidly enforced through each and every step of manufacture.

Features include quick and positive operation—just a quarter-turn to open or close. Lubricant grooves surrounding each port provide a positive seal when the valve is closed. In an open position, seating surfaces are not exposed.

Valve users who want one source of supply for lubricated plug as well as all types of bronze, iron, steel and corrosion-resistant valves will want full details on Powell Lubricated Plug Valves.

Available in Steel and Semi-Steel through distributors in principal cities. If none is located near you—or if you need help on valve problems—write direct to

PERFORMANCE PV VERIFIED

BRONZE, IRON, STEEL AND CORROSION-RESISTANT VALVES

The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR

The source of supply for all valve needs!

"Slip-On" Tubing Insulation

L-8 Developed specially to stop condensation on copper formed cold lines, the **Rubatex Division, Great American Industries, Inc.,** Bedford, Virginia, is marketing Closed Cellular Rubber Tubing.

It is a "slip-on" tubing insulation which readily bends without cutting or fitting and fits snugly to any contour of pipes. For application on cold carriers already installed, can be slit lengthwise, snapped around piping and sealed with an adhesive specially manufactured for this purpose.

Has nitrogen-filled closed cellular structure which repels water and moisture indefinitely even at cut edges—eliminating any necessity of additional vapor barrier.

Fire-safe, the Rubatex tubing has unusually good thermal insulation properties—a low K-factor of .28 at 75 F, which remains constant as Rubatex will not deteriorate in service.

Manufactured with minimum inside diameter of ⅜" and is produced in any lengths up to 250 ft.

PVC Expansion Joint

L-9 The first slip type pipe expansion joint of unplasticized polyvinyl chloride has been introduced by **Tube Turns Plastics, Inc.,** 2929 Magazine St., Louisville, Ky. It is made in 1", 2" and 3" sizes, and may be used with piping of smaller diameters by employing reducing bushings. All sizes allow an expansion of 3¾".

The new expansion joint is designed for use with rigidly fixed PVC piping subjected to thermal cycles. It has a Neoprene "O" ring packing and is suitable for a wide range of corrosive services. When made of normal impact PVC, the 1" size has a pressure rating of 205 psi at 75 F, and of 120 psi at 140 F; the 2" size has a pressure rating of 170 psi at 75 F, and of 100 psi at 140 F; the 3" size has a pressure rating of 150 psi at 75 F, and of 90 psi at 140 F.

The joint has been tested at pressures up to 325 psi, and temperatures up to 140 F.

Tube Turns Plastics, Inc., also manufacturers a complete line of PVC fittings and flanges, and PVC plug and diaphragm valves.

Condensation Return Unit

L-10 **The Deming Company,** Salem, Ohio, has added new single and duplex "Hotshot" condensation return pumping units to its line of commercial and industrial pumps and water systems. The new units are rated up to 10,000 sq ft of direct radiation with pressures up to 20 lb. High-pressure units are available up to 50 lb. Shallow-type, cast iron receivers in 6- or 20-gallon sizes permit low connection to the return line. No foundation bolts required. Can be set on floor or in a shallow pit.

The centrifugal pump has a fully enclosed bronze impeller, stainless steel shaft and compression type coupling. Will not vapor lock. Capacitor motor has built-in thermatron and overload protection with automatic reset.

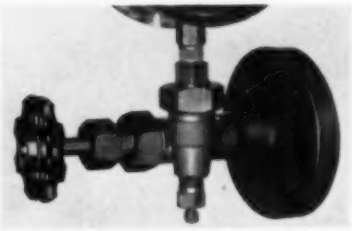
Automatic controls have a double pole switch mounted on the receiver and operated by a float. No diaphragm or stuffingbox. Duplex units equipped with alternator float switch which operates pumps in sequence or together under peak loads. They deliver twice the single pump capacity while operating against the same pressure.

Vacuum Line Sealing

L-11 A new plastic gasket material being offered by the Packing Division, **Flexrock Company**, 3645 Filbert St., Philadelphia 1, Pa., is formulated to solve vacuum line sealing problems. Users report that by adding 1/64" film or coating to flange faces and gasket surfaces, vacuum line leakage is reduced to a minimum.

Any slight leakage which may occur after line has been in service for some time can be corrected without dismantling flanges by simply applying 1/32" of Plastic Gasket material around the outside surfaces of the flange where they meet with the gasket.

Available in two formulations—one for air, steam, water, mild chemicals; the other for gasoline, oil, solvents, etc. Where flange faces are unmarred and come together evenly, the material can be used alone without any other type gasketing material. Plastic Gasket is non-hardening, and flanges are easy to dismantle even after years of service.



General Purpose Valve

L-12 A new valve for instrument piping and general use which acts as a block valve, as well as greatly reducing the number of threaded connections required, has been introduced by **Jerguson Gage & Valve Company**, 80 Fellsway, Somerville 45, Massachusetts.

This new valve, the Jerguson No. 66U-VG, is an offset valve with a

vertical rising ball check on the downstream side of the seat and with a solid shank connection to the vessel which makes it acceptable as a block or root valve, and makes it possible to eliminate the usual block valve.

These valves combine unions, nipples, reducers, elbows, tees, valve and drain valve into one space saving unit, thus greatly reducing the number of threaded connections. They have a double seating stem for repacking under pressure and a pressure bleeder valve and test gage connection. Seats are regrindable and renewable; and the valves have union connection to the gage.

The automatic release (upper right) is activated when heat of a fire causes a fusible metal link located above the hazard to part. Impulse is transmitted to the release mechanism located at the dry chemical unit. Release mechanism causes the cartridge to be punctured, pressurizing the extinguisher and forcing its dry chemical charge into the piping leading to the nozzles.

Automatic Dry Chemical Piped Fire System

L-13 A compact low-cost automatic dry chemical fire extinguishing system for flammable liquid, electrical and textile fire hazards has been developed by **Ansul Chemical Company,** of Marinette, Wis., pioneer manufacturer of dry chemical fire equipment.

The 30 lb piped system (PS-30) can be operated either automatically or manually. It is intended primarily for protection of moderately-sized hazards, such as paint spray and dip operations, small transformer vaults, heat-treating and oil quench operations, ovens, overhead cranes, stationary engines and textile lint hazards.

The Ansul PS-30 extinguisher consists of a 30 lb capacity dry chemical unit installed near the hazard and serving as a storage tank for the dry chemical. A special CO_2 gas pressure cartridge furnishes pressure to expel the dry chemical onto the fire through piping connecting the dry chemical unit with the hazard area.

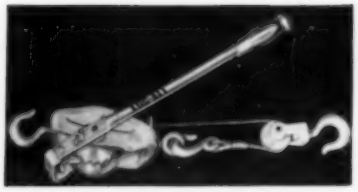
Depending on requirements of the hazard, the system can provide total flooding or local application. Special nozzles are provided to give the most efficient discharge of dry chemical for each type of application.

750 HP Packaged Boiler

L-14 A 750 hp package steam generator, the highest capacity fire - tube boiler manufactured since the establishment of the package boiler industry in 1935 has been developed by **Cyclotherm Division** National-U. S. Radiator Corporation, Oswego, N. Y. The powerful new unit delivers 26,000 lb/hr at over 80% efficiency.

Because of the patented Cyclonic Combustion principle incorporated in the design of the new unit it is no larger than most 500 hp package generators. Overall dimensions are: 28' x 9'6" x 10'8". Designed for heavy oil or gas, the boiler can be adapted to burn either LP-Gas or light oil, as well. Modulation over an extremely wide range permits guarantee of efficiencies of 80% or better down to a small fraction of the rated 750 hp capacity.

The husky new steam generator opens new prospects for plant engineers by combining all the advantages of package steam generators (high efficiency; simplified automatic operation; compact size; high efficiencies; inexpensive installation; no stack required; unified responsibility for operation) with steaming capacities formerly associated exclusively with HRT boilers assembled at the plant site, requiring large smoke stacks, separate buildings, etc. The Cyclotherm C-26,000 makes it possible to utilize package boilers for many industrial processing loads formerly considered "too big" for a single package boiler and makes multiple installation of these units competitive with all but the largest industrial boiler installations.



Winch-Hoist

L-15 A lightweight 1½ ton capacity ratchet lever hoist is being manufactured by **The Lug-All Company**, 355 Lancaster Ave., Haverford, Pa., with a standard lift of 30 ft, which makes it ideally suited for long pulls and lifts, thus eliminating the need for any staging.

This new Lug-All Model 3000-30 weighs only 13¾ lb and includes a highly flexible aircraft cable that permits lifting, pulling or lowering a 1½ ton load a distance of 15 ft (as illustrated) or a ¾ ton load a distance of 30 ft (using cable in a single line).

It includes these outstanding features: a protective type main aluminum alloy frame that allows instant inspection and easy cleaning, oiled-for - life bearings, stainless steel springs, three workable hooks, smooth operation in any position and a built-in pulley that can be used as a "snatch block" in close quarter work.

Safety is assured — the "safety handle" bends before the unit can be overloaded to prevent costly accidents. An interlocking pawl system securely locks the load. There are no brakes to slip! Free release only operates under no load conditions.

Another new unit with the same basic design, the Lug-All Model 2250-38, weighing only 13½ lb, offers a 19 ft lift or pull with a capacity of 2250 lb, and a 38 ft reach with a capacity of 1125 lb.

These new lightweight winch-hoists are priced at $49.85 for the Model 3000-30, and $49.70 for the Model 2250-38.

KEEP UP-TO-DATE

USE SPI

READER SERVICE

See Pages 16-19

All-Purpose Portable Crane

L-16 A new all-purpose portable crane weighing only 350 lb is being manufactured by **Sasgen Derrick Company,** 3101 W. Grand Ave., Chicago 22, Ill., for general duty industrial plant service.

The crane will carry a 3000 lb load on a single line with only one man at the crank and has been tested to stand a full 100% overload. It can be tilted back like a two-wheel truck and wheeled through low overhead doorways.

One of the outstanding features of the crane is a patented Safety Spur Gear Winch which operates with very low friction and requires only 7 turns of the crank to gain a complete drum revolution. The 7 to 1 gear reduction provides much easier and faster lifting, with a minimum degree of wear on the working parts of the winch.

Scotch Type Boilers

L-17 Twenty-six new Scotch Type heating boilers for firing with natural or forced draft gas oil burners are now being marketed under the name "Queen of Scots" by **National-U. S. Radiator Corporation,** Johnstown, Pa.

These boilers are said to meet the heating and hot water supply requirements of commercial, institutional and industrial installations.

Type SN "Queen of Scots" are available in 13 sizes for use with popular makes of commercial sized oil or gas burners employing natural draft. Net SBI steam ratings extend from 4,500 to 35,000 sq ft and SBI net water ratings from 7,200 to 56,000 sq ft.

When forced draft oil, gas or gas-oil firing is specified, Type SF boilers are available in 13 sizes. These have net steam ratings ranging from 6,440 to 50,000 sq ft and net water ratings extending from 10,300 to 80,000 sq ft.

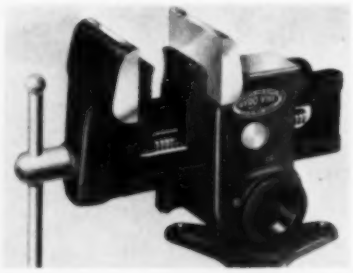
Manufacturer certifies that thermal efficiencies in excess of 80% can be developed with these Type SF boilers when fired with certain burners of known quality — properly installed and adjusted.

An outstanding feature is the "wet back" design that assures the rear combustion chamber being completely surrounded by water-backed heating surface. This construction is said to improve performance, reduce heat escape to boiler room, and eliminate refractories.

Sprayed-on Plastic Sheeting

L-18 **Wilson and Mankin,** Box 489, Decatur, Georgia is a franchised applicator of Plastispray which is a sprayed-on vinyl plastic sheeting formulated for site application.

The "plastic skin" provides a clean, attractive, maintenance-free covering for corridors, stairs, cafeterias, rest rooms, etc. It is equally effective on exteriors — a rubber-like veneer over cracked or leaking masonry. Unlimited color range. Plastispray thickness varies from 10/1000 to 1/16 in. depending on the performance required.



Vise Has Removable Pipe Jaws

L-19 A new Gyro-Vise model, featuring increased jaw width plus removable and replaceable pipe jaws, is announced

Plant, Research Laboratories and World Headquarters

BETTER ORIGINAL FASTER
Low Temperature EUTECTIC WELDING ALLOYS
STRONGER WELDS

EUTECTIC Welding News

PUBLISHED BY EUTECTIC WELDING ALLOYS CORPORATION, 40-40 172 STREET, FLUSHING 58, NEW YORK, N. Y.

"EUTECTIC" WELDING HEADLINES • TIME-MONEY-MACHINERY SAVERS

WELD SAVINGS APPLICATION REPORT "FINDS" $2754 FOR SO. TEXTILE MILL

Scores of leading industries are beginning to appreciate and utilize the tremendous opportunity available for cutting maintenance and production costs with welding. They are accomplishing this through a Weld Savings Application Report prepared without obligation by trained Eutectic District Engineers. This Report is a welding specialists recommendation for lowering costs and increasing production.

Use of this new and exclusive service pioneered by "Eutectic" has given one Southern textile manufacturer added savings of $680.00 through weld-repair of loom back boxes, card dobber cylinders and other cast iron equipment previously considered non weldable. The same Weld Savings Application Report showed the way to a $310.00 saving by replacing conventional overlay materials with Eutec-Trode 1851 (DC) for picker feed and calendar rolls. Copies of the Weld Savings Application Report left with the Purchasing Agent and Weldor as a guide to welding procedures, highlighted 38 additional weld savings applications.

A copy of this Weld Savings Application Report and reprints of similar reports prepared for varied industries (TIS 2637) are available from Eutectic District Engineers or from Eutectic's Technical Information Service.

ARCTIC AIR BASE OFFICERS CALL WSA "UNDERESTIMATED" AT $2,000,000

A recent Weld Savings Applications Report conducted by two Eutectic engineers for the U.S. Air Force was judged to have saved closer to $10,000,000 for the Northeast Air Command than the original estimate of $2,000,000. The basic purpose of the survey was to educate maintenance and repair personnel in the latest development in welding materials and techniques, and demonstrate how they could help to restore equipment damaged by 30 to 40 degree below zero temperatures, and over 100 miles per hour winds.

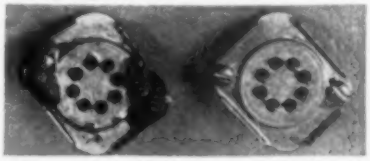
In one case, Air Force weldors successfully joined corrugated steel pipes at 20 below zero with Steel Tectic #1, a low amperage, multiple pass alloy for mild steel. Several cracked diesel engine blocks were salvaged by preparing with Eutectic's CutTrode and ChamerTrode in the damaged areas, and welding with Xyron 2-24 and Xyron 2-25. High-strength, porosity-free welds were produced by these new and advanced low temperature, cast-iron EutecTrodes. In this application alone, Eutectic engineers achieved savings close to $1,000,000. Additional savings were realized in the repair of 350 cylinder liners valued at about $1,000 each. EutecRod 140, a high strength, high density deposit, was recommended for rebuilding 50 aircraft cylinder heads, resulting in additional savings of $500,000. Eutec-TinWeld proved very effective in repairing diesel engine radiators; and EutecRod 1602, a specially developed, low-melting silver type alloy was the only successful method found for salvaging 50 aircraft fuel tanks. A ten minute, 16 mm film packed with practical know-how for saving time, machinery and money, showing some of the new techniques and developments utilized by the U.S. Air Force in Greenland is available free of charge.

$33,000 SAVED IN HEAVY EQUIPMENT

Replacement parts being discontinued for outdated earth moving equipment, an attempt to redesign the transmission cases got under way in a Mid-West plant. Arrow in illustration above indicate areas of great strain. Using EutecTrode 680 AC-DC, two machines were welded, tested for eight months, and then torn down and inspected. The welds were perfect in every detail. Subsequently, five machines were completely rebuilt, plus six more for other companies. Not one has failed. No keys were used; the weld takes all the strain. EutecTrode 680 AC-DC is an all-purpose, corrosion resistant electrode for very high alloy and carbon steels with ultimate tensile strength up to 120,000 psi.

EUTECTIC-SILWELD ELIMINATES WASTE AND COSTLY "CLEANING UP"

An electronics manufacturer thought he would have no problem silver-soldering screws to radio sockets, UNTIL he tried to do it with conventional materials. The results he got are shown in the photographs at left, below. The solution was the use of Eutec-SilWeld 1618, which eliminated the waste of costly alloy and expensive cleaning up, right, below.



Eutectic-SilWeld is a new, high silver content alloy blended with special flux, in convenient, "paint-on," paste form. It eliminates the need for costly rings, shim and strips, is easier to use than conventional silver rods and alloys that require high heats. Many weldors are using Eutec-SilWeld 1618 to promote heavy "surface alloying," and to increase the flow of bead-forming alloys into butt joints.

The area of the weld where free flow is desired is simply painted with Eutec-SilWeld 1618. The area where a bead is required is left bare. The weldor then "runs" a EutecRod like 16FC, 185FC, 18FC, 146FC or 20FC. The result is a neat bead and a "neater" saving. As EutecRod mixes with the silver in Eutec-SilWeld 1618, the melting point is lowered. Tinning, cladding, coating and filling defects and porosities are all situations where the new Eutec-SilWeld 1618 offers worthwhile savings above the cost of welding with conventional silver brazing alloys.

CONTROLLED AREA HEATING GIVES MAXIMUM CASTINGS WELDS WITHOUT WARPAGE

To insure a good weld without warpage on cracked heads and blocks, many repairmen now follow this effective procedure: First they thoroughly clean the area around the break. Eutectic's Form-A-Jig is then packed to both the outer and inner surfaces of the casting, to within an inch of the break, localizing the heat to the weld area, and controlling warpage. The hole is then repaired with EutecRod 1900 and Eutector 1900 flux, a superior weld combination for magnesium. The excellent heat absorption qualities of Form-A-Jig permit the casting to be picked up with bare hands, without discomfort, as soon as the weld is complete.

EUTECTOR ALBRO-FLUX 1601 ELIMINATES ALUMINUM BRONZE JOINING PROBLEMS

Eutectic District Engineers are introducing the latest result of Eutectic's flux-minded research. Eutector Albro-Flux 1601, the newest of Eutectic's temperature indicating fluxes, helps eliminate the problems associated with joining and repairing all grades of aluminum bronze, and is ideal for joining aluminum bronze to non-ferrous metals normally silver bronzed.

Such industries as, fabricators of small marine parts, will find the new Albro-Flux 1601 solves problems found in torch-joining aluminum bronze. It makes possible joining and repair of parts too small for arc welding. Albro-Flux 1601 is particularly recommended for use with EutecRods 1600, 1601, 1700 and 1801.

The activity range of Albro-Flux 1601 is between 100 and 1600 degrees F. It permits use of a great variety of silver solder type alloys and allows replacement of standard tin bronzes with alloys providing much higher joint strength. The increased wetting activity and the ability of Albro-Flux 1601 to dissolve aluminum oxide means the molten silver alloy with which it is used flattens out and flows readily.

by **The Columbian Vise & Mfg. Co.**, 9023 Bessemer Ave., Cleveland.

Known as No. 73½, the new vise has a jaw width of 3½-in. Addition of pipe jaws to assembly is claimed to mark the first time these have been offered in vises of this type. Pipe capacity is ⅛ to 1½-in.

The Gyro-Vise operates on a round base on which it can be turned and locked in any desired position. It may be used upright, laid flat on either side or placed at any required angle. When not in use, vise can be removed and kept in a drawer or tool chest. Any needed number of additional bases may be placed in different locations and the vise easily moved from job to job.

Automatic Gas Valve

L-20 Fast closing and slow opening are features of the new line of Fireye Series 81L automatic gas valves introduced by **Electronics Corporation of America**, Combustion Control Division, 77 Broadway, Cambridge 4, Mass.

For use with Fireye flame safeguard systems, these motor-operated valves have a powerful compression-type spring that automatically shuts off fuel in 0.8 of a second. A special heavy-duty electric drive unit controls the rate of opening to reach 75% of maximum fuel flow in six seconds.

Another feature is the availability of a position indicating switch, which performs as a safety interlock. If, prior to light-off of a burner, the valve is open as little as a fraction of an inch, the switch will not allow the light-off to take place. Instead, the electric circuit to the burner control will remain off until the valve is completely closed.

In case of flame failure or loss of electric power, or on operation of limit switches or other interlocks in the burner control circuit, reliable closing of the valves is assured by two proved principles of construction. One is the "double safeguard" release, wherein either of two independent releases will trip the valve. A new "shearing action" by the valve disc, which literally cuts through dirt or scale on the valve seat, is the second. Details are given in Bulletin CV-32.

New Solvent Detergent

L-21 Oakite Composition No. 117, a solvent detergent which combines thorough cleaning ability with safety factors, has recently been introduced by **Oakite Products, Inc.**, 123A Rector St., New York 6, N. Y.

A clear solvent designed to remove grease, oil, and smut from machinery where water cannot be used, Oakite Composition No. 117 is equally effective in cleaning electrical equipment, diesel cabs, and engine compartments. The new material has a flash point of 185°. It has an exposure tolerance rating two and a half times greater than trichlorethylene and twenty times that of carbon tetrachloride.

Oakite Composition No. 117 is used full strength, applied by brush, or immersion, or a non-atomizing spray. No rinse is necessary—parts may be blown dry with compressed air. For certain uses it is possible to use the material diluted with up to equal parts high flash petroleum distillate.

PVC Pipe Line Expanded

L-22 A new line of light wall polyvinyl chloride pipe with a uniform pressure rating in all sizes has been introduced by the Alloy Tube Division of **The Carpenter Steel Company**, Union, New Jersey.

This series, known as Schedule PR-150, represents an addition to the firm's recently announced Schedule 40 and Schedule 80 pipe. Its

alive today! ... *like 400,000 other Americans cured of cancer who went to their doctors in time*

Let's give our doctors a chance. Thousands of Americans are being cured of cancer every year. But too many are losing their lives needlessly because they failed to consult their doctors when the disease was in its early ... and therefore more curable ... stage.

Form the life-saving habit of a head-to-toe physical checkup once a year. For men, this should include a chest x-ray; for women, a pelvic examination. Make it a habit ... for *life.*

American Cancer Society

generally thinner wall and larger inside diameter give it greater flow capacity than Schedule 40 and 80 in the same nominal pipe sizes.

There are two basic types in this new series. One has high chemical resistance and a maximum working pressure of 150 psi at 75 F. The other has high impact strength and a rating of 125 psi at the same temperature. These two working pressures are constant in all pipe sizes.

This pipe, a rigid unplasticized material, is available in eight sizes ranging from ½" to 4". Wall thicknesses range between .050" and .230". All pipe in the series is furnished in standard 10 and 20 foot lengths with plain ends.

A full line of socket solvent cement fittings is available for use with this new PVC pipe. Threaded joints are not suitable.

On an installed cost basis, Schedule PR-150 compares favorably with conventional threaded piping systems in iron pipe or galvanized. It also offers numerous advantages which can result in the reduction of maintenance and operating costs.

This thin - wall pipe is easily fabricated on standard metal and woodworking equipment. It can be formed, sawed, machined, hot gas welded and solvent cemented. Installation is easy and inexpensive.

Universal Steam Trap

L-23 A new, small lightweight bucket type steam trap for unit heaters, small processing machinery and like applications has been introduced by **Perfecting Service Company**, 332 Atando Ave., Charlotte 6, N. C. It is available in ½" pipe size, with a universal pressure range from 0 to 125 psi.

Developed for low pressure-high condensate rate applications where a smaller and inexpensive trapping unit is needed, design embodies all the features of Perfecting Service Company's Unitrap line of steam traps.

This line of traps is completely universal in pressure application, with faster warm-up, less wear, lower maintenance and capable of handling more condensate per hour without steam loss.

The trap operates on a balanced pressure principle thru the unique function of its new and exclusive Dual - valve, which automatically compensates for differential pressures thru a range of 0 to 250 psi.

The Dual-valve permits all Unitraps to operate thru fluctuating steam pressures and variable condensate rates within range of the traps without changing orifice size or bucket weights.

Its extra large orifice achieves tremendous discharge capacities (at 250 psi) ranging from 3500 lb/hr in the ½" to 55,000 lb/hr in the 1½" and 2" traps. These greater capacities are one of the outstanding features. This factor also results in faster warm-up. The positive seating of the valve prevents wire draw and loss of steam.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17

Electrically Heated Units For Gages and Valves

L-24 An electrically heated Chromalox unit for heating gages and valves where there is no steam available has been developed by **Jerguson Gage & Valve Co.**, 80 Fellsway, Somerville 45, Mass.

Applications include heating of cold liquids such as waxes (so as to get an accurate reading) or to prevent gage freezing and breakage. Units also valuable where there is a need for very close control of temperature in gage glass.

Gages are available in double-chamber reflex or external tube transparent gage models in various sizes and pressure groups. Where explosion-proof construction is required, the electrically heated units can be adapted to the requirements of Underwriters' Laboratory.

News (Continued)

Fort Worth Steel—La.

Fort Worth Steel & Machinery Company has established a factory branch warehouse at 1106 North Market Street in **Shreveport, La.**, with complete stocks of "Fort Worth" equipment for power transmission and materials handling.

M. S. Jackson, Jr., the Fort Worth firm's vice-president in charge of sales, announced that the new facility has been opened to provide "Fort Worth" industrial products immediately available with superior service to fulfill the growing needs of industry in the Shreveport area.

The warehouse serves independent distributors of "Fort Worth" products in North Louisiana, East Texas and South Arkansas.

FWS&M manufactures and markets nationally a variety of products widely applied in industry. These include V-belt and roller-chain drive equipment for mechanical power transmission, machinery for conveying bulk materials and specialized machinery for vegetable oil and feed mills.

Ed Cole, FWS&M district sales engineer, supervises the Shreveport warehouse, one of more than a dozen such facilities the company maintains across the nation.

Schnyder Consultant For Lummus Division

The Lummus Company, engineers and constructors, 385 Madison Avenue, New York, announces the association of **A. P. Schnyder** as Consulting Engineer for the Pulp and Paper Mill Division.

Mr. Schnyder is well known in the pulp and paper industry, having over thirty years of experience in engineering and consulting work embracing plant design, site selection, raw material evaluations and research. Mr. Schnyder has participated in the design of a great many new mills in the U. S. and Canada, including basic design of the first Southern newsprint mill in the United States.

At Lummus he will provide consulation on the establishment of new plants and the rebuilding and modernization of existing ones, applying the principles of continuous operation and automation utilized in others of the process industries.

News for the South & Southwest (Continued)

F. T. Murphy

J. N. Rogers

B&W Tubular Products St. Louis Div. Changes

Frank T. Murphy has retired as **St. Louis District** sales manager of The Babcock & Wilcox Company's Tubular Products Division, according to James S. Anderson, general sales manager of the division. At the same time, Mr. Anderson reported the appointment of **J. N. Rogers** as sales representative in charge of the St. Louis District office.

A native of Green Bay, Wisconsin, Mr. Murphy has a service record dating back to 1913, when he started in the Chicago District sales office of The Globe Steel Tubes Company. During his 43 years of service, he held supervisory positions throughout the production departments of the Milwaukee plant, and was night superintendent during World War I.

Entering the sales department in 1926, Mr. Murphy rose to St. Louis District sales manager in 1940. He continued in this post when Globe became part of the B&W organization in 1955.

J. N. Rogers has been with B&W since 1947, serving as a Tubular Products Division salesman in the St. Louis District. He will continue to make his headquarters in the division's St. Louis office in the Continental Bldg., 3615 Olive St.

DeVilbiss—Southwest

An expansion of **The DeVilbiss Company** direct factory branch in **Dallas, Texas** and relocation in the Trinity Industrial District on Irving Blvd., a main artery between Dallas and Fort Worth, are announced by Henry M. Kidd, vice president in charge of spray equipment sales.

DeVilbiss with headquarters in Toledo, Ohio is a leading manufacturer of spray guns, booths, air compressors, rubber hose and other components for complete finishing systems.

Mr. Kidd pointed out that the southwestern U. S. sales division under **W. Clark Spruce**, manager, has experienced a rapid growth with the establishment of many industries in this sector. The DeVilbiss southwestern sales territory includes **Texas, New Mexico, Arkansas, Oklahoma** and **Louisiana.**

Carbide & Carbon—Tenn.

Plans for a new plant for the manufacture of fabricated carbon products were announced recently by **Union Carbide and Carbon Corporation.**

The corporation has taken an option on a tract four miles south of **Lawrenceburg, Tennessee.** Upon completion, the plant will be operated by National Carbon Company, a division of the corporation. Initial employment is estimated at approximately 100.

The new plant will have an annual productive capacity of 12 million pounds of carbon products, with adequate provision for future expansion. This increase in productive capacity is independent of the major expansion in electrode products, recently announced by National Carbon Company, which totals more than 100 million pounds annually.

Atlanta District Manager National Electric Products

J. B. Nicholson, formerly a sales representative in National Electric Products Corporation's Philadelphia office, has been named Atlanta District Manager for the firm.

In his new position, Mr. Nicholson will supervise the marketing of all National products including wires, cables, conduit, electrical raceways, and accessories. He joined National Electric Products Corporation in 1948 as service manager in the Philadelphia office. He was later transferred to sales.

Rockwell's Texas Plant to Expand Production

Rockwell Manufacturing Company's meter and valve production in the Southwest and Midwestern states will be doubled within two years, according to Lloyd A. Dixon, Jr., vice-president in charge of the Meter and Valve Division.

Speaking at the opening of the division's first nationwide regional sales managers meeting to be held in the Southwest (Sulphur Springs, Texas), Mr. Dixon also revealed plans for adding production of "several important new valve lines" at the company's three-year-old plant.

"To keep pace with the rapid development of the Southwest, we are gradually concentrating the lion's share of our Rockwell-Nordstrom valve and some other production facilities in and near this region.

Mr. Dixon also revealed that a large part of the company's new valve product development program has been shifted to Sulphur Springs, where the company has also established a school for bringing utility, petroleum and chemical engineers up to date on latest valving and valve maintenance techniques.

News for the South & Southwest (Continued)

Ingalls Industries Completes $9 Million Program—70% Growth in 3-Year Period

Completion of a three-year, $9,000,000 expansion program for the **Ingalls Industries** was recently announced by **Robert I. Ingalls, Jr.,** company Chairman of the Board.

In a report announcing the completion of the program, Mr. Ingalls said since 1953 to date, Ingalls Industries have booked well over $350,000,000 in sales. From an approximate dollar volume of $62,000,000 in 1953, the company has grown to a present average annual volume in excess of $105,000,000. This constitutes a 70% growth in the three-year period, the report showed.

In individual operations of the company, the **Ingalls Shipbuilding Corporation,** operating the shipyards at Pascagoula, Mississippi and Decatur, Alabama, has more than doubled its volume of orders in three years.

The **Birmingham Tank Division** also showed a very appreciable increase during this period.

Steel fabrication by the **Ingalls Iron Works Company** and erection by **Ingalls Steel Erection Company** as well as the Steel Warehouse Division, though stymied by third quarter steel shortages, are showing strong gains with a three-year booking of more than $78,000,000.

To support and maintain this rate of growth, the Ingalls Industries entered into a continuing program of expansion for every division with an over-all expenditure during the last three years of more than $9,000,000, Mr. Ingalls said.

All expenditures were made on a "pay-as-you-go basis," the report pointed out, with no borrowed funds.

In setting forth the progress of the company, Mr. Ingalls paid tribute to "loyal, intelligent and effective cooperation of management staff and a corps of workmen of which I am very proud . . .

"The abilities of these men have made possible the phenomenal three-year growth of this company," he added. "We have plowed back into the fertile field of our business to create better working conditions, more jobs, more buying power, and better service."

Mr. Ingalls lauded the opportunities of Southern industry, saying: "The land of opportunity is truly here in the South, and we shall continue to plan for an even greater tomorrow and the opportunity to serve the South and the nation as a whole."

Ingalls, an Alabama corporation, owned in Alabama, is the largest locally owned industry in the state.

Its products and services are sold throughout the United States and in many foreign countries. Ingalls builds both for private industry and the U. S. government in the fabrication and erection of steel for major structures and in the construction of ships, tow-boats and tanks of all sizes and types.

H. K. Porter Acquires W. Va. Steel & Mfg. Co.

H. K. Porter Company, Inc. has acquired the business of **West Virginia Steel and Manufacturing Company,** Huntington, W. Va. Announcement was made by **B. Campbell Blake,** Vice President and General Manager of Porter's Connors Steel Division (Birmingham, Ala.) with which division the operations of the new plant will be combined. Sales of the newly acquired concern are currently at the rate of $18 million annually.

West Virginia Steel, with offices and plant in Huntington, was founded in 1907. **J. J. Durkin,** West Virginia's Executive Vice President, who joined them in 1928, will continue to supervise operations at Huntington.

West Virginia Steel melts and rolls electric furnace steel and rails. Its products include light steel rails, reinforcing bars, mine roof bolts, hot rolled bars and semi-finished steel. Porter plans to expand the West Virginia operation.

H. K. Porter Company, Inc. acquired Connors Steel in 1949 and recently has completed a multi-million dollar plant expansion program. Its capacity was increased by 15% in 1955 alone.

Simplex Valve—Ala. & Ga.

Simplex Valve & Meter Company announces the appointment of the **Ward K. Stallings Company** of 3120 Maple Drive, N.E., Atlanta 5, Georgia as its representative for the states of **Alabama** and **Georgia.**

The Stallings Company can draw on a great deal of experience to aid its customers since the three members of the firm have a wealth of background in the filtration and waste fields. Mr. Stallings was Chief Engineer for a period of 6 years with Kielley & Mueller, Inc. **Carl L. Fox, Jr.,** who is a licensed Mechanical Engineer in both Alabama and Georgia, has had over 5 years experience in the Instrumentation and Electronics field. The third member of the firm, **Roy W. Freeman,** has over 5 years experience as a Sales Engineer in the Waste and Sewage field and is well known throughout the territory.

Texas Area Rep. for Western Precipitation

Western Precipitation Corporation, leaders in the design and installation of equipment for recovering dust, fume and fly ash from industrial gases, announces that **Marshall, Neil & Pauley, Inc.,** have been appointed Agents for the sales of the company's Multiclone and Dualaire products in the **Texas** area.

Marshall, Neil and Pauley are well-known in the Gulf Coast area and are equipped to provide excellent sales coverage throughout Texas from strategically-located offices in Houston and Dallas (plus a third office in New Orleans). In addition to Western Precipitation's Multiclone and Dualaire lines, they also supply compressors, cooling towers, fans, steam generators and other equipment to the petroleum, petro-chemical, chemical, construction and other industries, and also are very active in air conditioning, heating and ventilating fields.

As agents for Multiclone and Dualaire equipment in the State of Texas, Marshall, Neil and Pauley will operate under supervision of Western Precipitation's District Offices in Atlanta, Georgia. District Sales Manager for the Atlanta Office is **Kenneth H. Cree,** with **Gilbert C. Schneider** serving as Associate Sales Engineer. Both will work closely with Marshall, Neil and Pauley in serving customer's interests in the Texas area.

All-State Welding Names Southeastern Manager

John Strother of Concord, Tenn., is now serving as Regional Manager for **All-State Welding Alloys Co., Inc.,** in **Ga., N. C., S. C., Tenn., Ky., Va.** and **W. Va.** Announcement of his appointment was made by T. D. Nast, president, at the Company's offices, White Plains, N. Y.

Mr. Strother is responsible for sales and service to the users and distributors of All-State Alloys and Fluxes in his area. He will be the contact man for All-State's metallurgical resources and experimental laboratory, which provide technical assistance for the solution of all manner of problems having to do with the welding, brazing, soldering, tinning and cutting of metals for maintenance, reclamation, construction, and production of metal parts and equipment.

Bituminous Coal Lab.

John W. Tieman has been promoted to Supervising Engineer of the BCR Columbus laboratory according to an announcement by Dr. A. A. Potter, president of **Bituminous Coal Research, Inc.** Mr. Tieman, under James R. Garvey, assistant director of research, will directly supervise all activities at the **Columbus, Ohio,** laboratory.

Dr. Potter said that the rapid growth of the national research association has necessitated the appointment of additional supervisory personnel. Since the establishment of this coal industry laboratory in September 1953, it has become an active center not only for the conduct of coal-utilization research, but also for meetings of engineers and other executives of the coal and related industries.

Reliance — Southeastern

The assignment of three additional sales engineers to the Southeastern District of the **Reliance Electric and Engineering Company,** manufacturer of electric motors and variable-speed drives, includes the appointment of **Joel E. King, Jr.,** to the **Atlanta** office, **Donald H. Gordon** to **Birmingham** and **Alfred W. Fairer** to **Charlotte.**

King, who joined the Atlanta office where **E. G. Orahood,** Manager of the Southeastern District, makes his headquarters, is a native of Pine Bluff, Arkansas, and graduated from Georgia Institute of Technology in 1953.

Gordon, from Birmingham, will report to **Rex T. Willard,** Manager of the sales office there. Also a graduate of Georgia Institute of Technology in the Class of 1953, he was born and raised in Atlanta, Georgia.

Fairer, born in Charleston, West Virginia, received an engineering education at Cornell University, graduating in 1953. He reports directly to **Frank W. Leitner,** Charlotte Office Manager.

Bay State—Abrasive Engr.

James M. Rooney, 1028 Drexel Drive, Birmingham, Alabama, was named an Abrasive Engineer to cover the northern part of **Alabama,** eastern **Arkansas,** northern **Georgia,** northern **Mississippi,** and western **Tennessee.** The appointment was announced recently by Elden L. Auker, Vice-President of **Bay State Abrasive Products Co.,** Westboro, Mass. He recently completed a training period at the Westboro firms' home office.

Prior to his affiliation with Bay State, Mr. Rooney held a sales position, covering the southern states, with the Unistrut Products Company, Chicago.

Temple Heads Eng. Sls. Dept. of Fort Worth Steel & Mach.

Fort Worth Steel & Machinery Company, Fort Worth, Texas, has created a department of engineering sales. Appointed to head it is **L. B. Temple,** the Fort Worth firm's vice president in charge of engineering since 1950.

President **G. A. Jaggers** announced the new department would carry out a program to expand FWS&M's sales of fully-engineered plant installations of mechanical and pneumatic systems for handling bulk materials.

He explained that this program and recent general expansion of FWS&M sales had necessitated removal of engineering sales from the single department which previously encompassed this function as well as merchandise sales.

The merchandise sales department, headed by Vice President **M. S. Jackson, Jr.,** now is devoted fully to sales of standard "Fort Worth" products. These include V-belt sheaves, roller-chain sprockets and other power-transmission equipment and conveying and elevating machinery. "Fort Worth" products are distributed nationally.

"A principal aim in this reorganization," said Jaggers, "is to assure that even as our expansion continues, we will maintain excellent service to our customers, on both standard products and individually engineered products."

The new department, he continued, will enable FWS&M to serve more fully the extensive need for engineered bulk-materials-handling systems in a wide variety of industries in all parts of the nation. These include cement, chemicals, woodworking, foods and agricultural products processing plants.

FWS&M has opened engineering sales offices in Jersey City and Houston as well as in Fort Worth. This, explains Temple, is to facilitate service to industries in the regions where FWS&M anticipates earliest new development. As expansion progresses, he adds, offices are to be established in other locations.

Temple joined FWS&M in 1940 soon after graduation from the Georgia Institute of Technology with a degree in mechanical engineering. He first was a service engineer in the Memphis area, then came to FWS&M's headquarters engineering department, became Southwest district manager in the late 1940's, manager of engineering sales in 1948 and vice president in charge of engineering in 1950.

Morse Chain Opens Charlotte Warehouse

Robert J. Koch, Field Sales Manager of **Morse Chain Company,** a Borg-Warner Industry, Ithaca, New York, recently announced the opening of a new branch sales office and warehouse at **Charlotte, North Carolina.** The new warehouse will offer improved customer service and speedier delivery of Morse Power Transmission Products to manufacturers and distributors in the southeastern portion of the country. The warehouse will serve industry in **Florida, Georgia, Alabama, South Carolina, North Carolina, Tennessee** and **Virginia.**

Raymond H. Whitney, who has fifteen year's experience in the application and sales of power transmission products, has been named district manager for the new warehouse area.

Tennessee Heating Sales to Handle K & M Products

Kaye & MacDonald, Inc., West Orange, N. J., has appointed **Tennessee Heating Sales Company,** 166½ Blount Ave., Knoxville, Tenn., as manufacturer's agent, giving engineering assistance in the sizing, installation and engineering service on all K & M equipment — steam traps, air filters, pressure and temperature regulators, valves, etc. Tennessee has branch offices in Chattanooga, Nashville and Kingsport, Tenn.

Cutler-Hammer — Atlanta

Cutler-Hammer, Inc., pioneer electrical manufacturers of Milwaukee, Wisconsin, have announced the appointment of **B. R. Stratton** as manager of the firm's **Atlanta district** sales office.

Mr. Stratton, former branch manager at Tulsa, Oklahoma, has been with the firm in an engineering sales capacity since 1936.

S & K — East Texas

Schutte and Koerting Company, Manufacturing Engineers, Cornwells Heights, Bucks County, Pa. announces the appointment of **W. John Schwing,** 4007 Bellaire Boulevard, Houston 25, Texas, as their representative for the eastern half of **Texas.**

Mr. Schwing, who was formerly associated with the company, has had fifteen years of experience in engineering, design, and equipment testing. His application know-how of SK's line of jet apparatus, valves, strainers, heat transfer apparatus, rotameters and flow indicators, gear pumps, and oil firing equipment should prove of valuable assistance to companies interested in these products.

L.O.F Glass Fibers—N. C.

R. H. Barnard, Jr., Charlotte, N. C., field representative for the **L.O.F Glass Fibers Company,** has been promoted to District Manager of the Charlotte area.

Prior to joining L.O.F Glass Fibers, Mr. Barnard was with Glass Fibers Inc. for four years, first as an industrial engineer and later as Charlotte sales representative.

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News for the South & Southwest (Continued)

Kappele Engineering—Tulsa

J. A. (Jerry) Kappele, formerly with Humble Oil & Refining Company, has joined his father's firm, **Kappele Engineering Company,** and will head up the company's Tulsa office at 705 So. 93 E. Ave. Kappele Engineering Company is the manufacturer's agent in Oklahoma and part of Kansas and Arkansas for Leslie Company reducing valves, Nicholson steam traps and Marshalltown gauges. M. T. Kappele, president, will continue to manage the firm and reside in Ponca City.

Jerry, a member of ASME, received his mechanical engineering degree from Oklahoma A & M in 1948 and has been with Humble eight years in the maintenance engineering department at the company's Baytown refinery.

Cleaver-Brooks—Texas

The Cleaver-Brooks Company announces the appointment of **Jim Marshall Sales Engineering Service** as manufacturers' representative for the sale of Cleaver-Brooks boilers and equipment.

Located at 135 West Hollywood, San Antonio, Texas, their territory will include counties in southern **Texas.**

Cleaver - Brooks manufactures equipment for the generation and utilization of heat. Among its products are oil, gas and combination oil/gas fired stationary boilers, mobile steam boilers, distillation equipment, evaporators and industrial oil and gas burners.

Norton — W. Va.

Charles B. Martin has been appointed an abrasive engineer by **Norton Company.** His territory will include **West Virginia.** Mr. Martin has been a field engineer at Norton's Pittsburgh district office since 1945.

Dowell—Chattanooga

Dowell Incorporated, Tulsa, Oklahoma, offering chemical cleaning service to Southern & Southwestern industrial, power and large service plants, has announced the opening of a new station at 1704 Camden St. —Box 8177, **Chattanooga, Tennessee.** The new location in Chattanooga replaces the former Anniston, Alabama, station.

L. B. Foster Company Atlanta and Houston

The L. B. Foster Company has opened a new warehouse center in **Atlanta, Georgia,** and is expanding operations in **Houston, Texas.** Company supplies railroad trackage, steel sheet piling and pipe to Southern industry.

Atlanta warehousing facilities were recently moved to a new 18 acre site six miles north of Atlanta and one-half miles west of the four-lane Buford Highway. Site includes equipment for reconditioning piling and rail and for cutting structural grade pipe to customer specifications. Eventually over two miles of rail trackage will be laid to expedite storage and shipping.

Atlanta sales office (with headquarters at 795 Peachtree St., N.E.), is headed by **Paul Duke,** regional general manager.

Foster's new Houston headquarters are at Suite 1119, Bank of the Southwest Building, the city's newest skyscraper. Company also maintains a 17-acre Houston warehouse, stocked with a complete line of the company's products. **R. A. Anderson,** vice president and regional general manager in the Houston office, recently announced the appointment of **Ray Laden** as district sales manager.

Square D—New Plants

Square D Company has named **Walter Nollenberger** as manager of a major new manufacturing plant to be built in **Lexington, Ky.,** and **Stephen Kovach** as manager of a smaller regional assembly plant now under construction in **Atlanta, Ga.** Both plants are scheduled for completion in 1957.

Bridgeport Brass — Texas

Roy A. Egelhoff has been named district manager of the Dallas Sales office of the **Bridgeport Brass Company.** In this post he will supervise Bridgeport's mill products sales activity both in the **Dallas** and **Houston area.** He replaces **Robert Nielson** who has been named regional representative of Bridgeport's Aluminum division in the **Tulsa, Dallas** and **Houston area.**

Kerrigan—Grating Div.

Ben H. Juhan, after a year's leave of absence, has returned as Manager of the **Grating Division** of **Kerrigan Iron Works, Inc.,** New York, Chicago and Nashville, manufacturers of Weldforged grating, bridge flooring, lighting standards, mast arms and brackets.

Mr. Juhan is a graduate of the University of Georgia and a former Captain in the U. S. Air Force. Before joining Kerrigan he was engaged in industrial management work with Tennessee Aircraft Corporation. Prior to that he was connected with Goodyear Tire and Rubber Company in their foreign comptroller's office and was in the Sales Department of Quaker Oats Company for three years.

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Manufacturers' Agents

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Listing of Advertisers and Manufacturers' Agents are published as a convenience to readers and not as a part of the advertising contract. Care will be taken to list and index correctly. However, no allowance can be made for errors, or for failure to insert. We will appreciate your calling to our attention any corrections or omissions promptly. Only manufacturers' agents representing advertisers in this issue are listed below.

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E. W. O'BRIEN, Business Mgr.

Sworn to and subscribed before me this 24th day of September, 1956.

SEBA J. JONES, Notary Public

My commission expires Feb. 24, 1958.

78 JENKINS PRACTICAL PIPING LAYOUTS

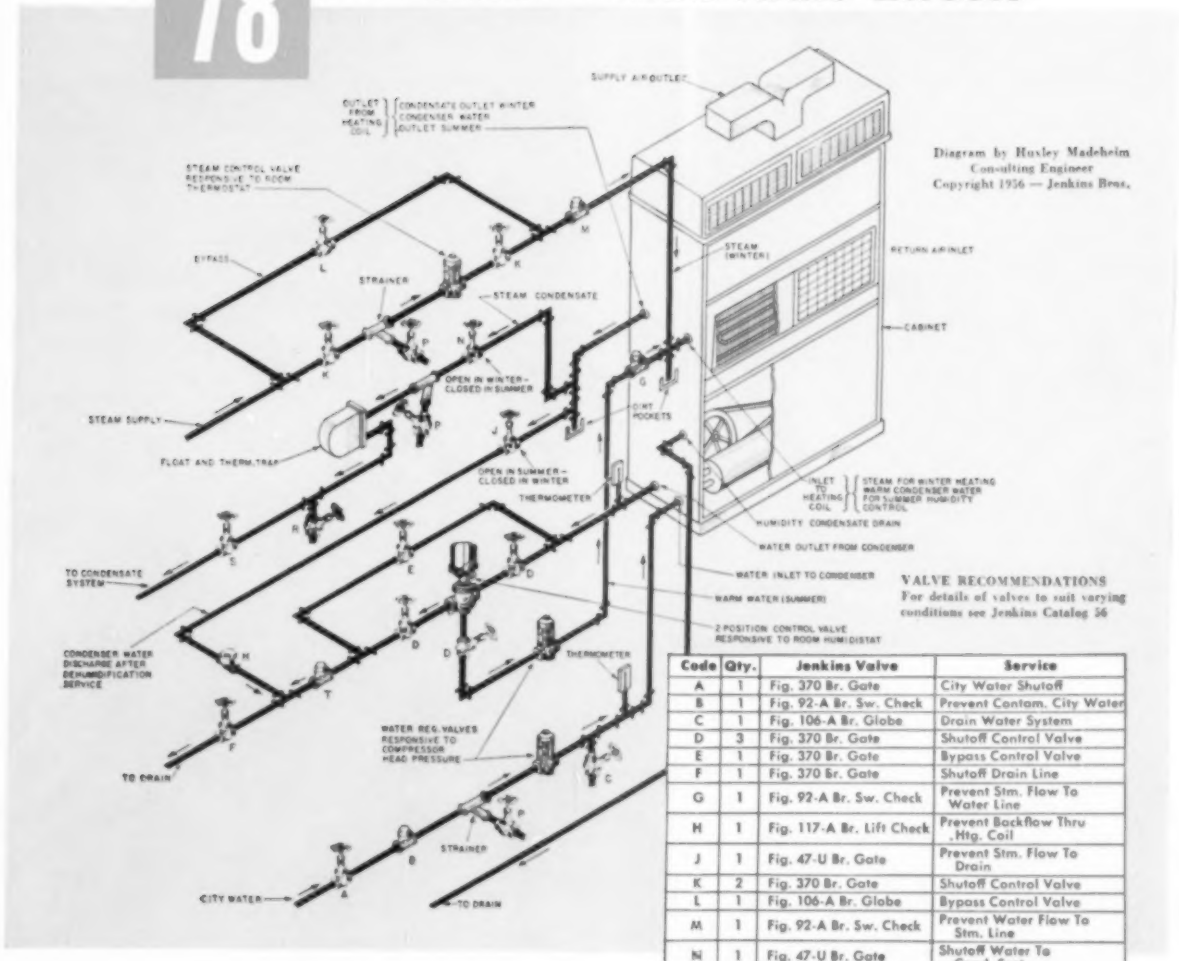

Diagram by Huxley Madeheim
Consulting Engineer

VALVE RECOMMENDATIONS
For details of valves to suit varying conditions see Jenkins Catalog 56

Code	Qty.	Jenkins Valve	Service
A	1	Fig. 370 Br. Gate	City Water Shutoff
B	1	Fig. 92-A Br. Sw. Check	Prevent Contam. City Water
C	1	Fig. 106-A Br. Globe	Drain Water System
D	3	Fig. 370 Br. Gate	Shutoff Control Valve
E	1	Fig. 370 Br. Gate	Bypass Control Valve
F	1	Fig. 370 Br. Gate	Shutoff Drain Line
G	1	Fig. 92-A Br. Sw. Check	Prevent Stm. Flow To Water Line
H	1	Fig. 117-A Br. Lift Check	Prevent Backflow Thru Htg. Coil
J	1	Fig. 47-U Br. Gate	Prevent Stm. Flow To Drain
K	2	Fig. 370 Br. Gate	Shutoff Control Valve
L	1	Fig. 106-A Br. Globe	Bypass Control Valve
M	1	Fig. 92-A Br. Sw. Check	Prevent Water Flow To Stm. Line
N	1	Fig. 47-U Br. Gate	Shutoff Water To Cond. Syst.
P	4	Fig. 106-A Br. Globe	Strainer Blowoff
R	1	Fig. 106-A Br. Globe	Trap Test
S	1	Fig. 370 Br. Gate	Shutoff Condensate Flow

How to plan piping connections for an all-year SELF-CONTAINED AIR CONDITIONING UNIT

A factory-built "package", the self-contained air conditioning unit shown in this layout is designed for both summer cooling and winter heating. In this particular system, it is assumed that steam is available for winter heating, and that the condenser is served by the city water supply. The condenser water discharge is used for the reheat necessary for humidity control.

The hookup for humidity control, particularly important for installations such as in night clubs, auditoriums, and others having a high moisture removal load, is shown in the diagram.

During the winter season, the heat output is regulated by a modulating steam valve which operates in response to a room thermostat. In the summer, another room thermostat starts the compressor when cooling is required, and the two-position water control valve, located as shown in the diagram, permits the water to flow to the drain.

When dehumidification is required without cooling, a room humidistat keeps the compressor in operation, but changes the position of the two-position water control valve so that the condenser discharge flows to the heating coil.

Two water-regulating valves are employed as illustrated. One, in the city water line, is set in the usual manner to maintain a predetermined head pressure on the compressor by varying the amount of water flowing into the condenser. The second, in the line from the condenser to the heating coil, is set for a head pressure higher than the pressure on the feed control valve.

This secondary condenser water control reduces cooling capacity and, at the same time, provides hotter water for reheat in the heating coil, thus serving to maintain proper relative humidity without excessive reduction of temperature. The amount of reheat obtained is approximately equal to the cooling provided by the unit, so that the net effect is that of dehumidification only, without cooling.

Consultation with accredited piping engineers and contractors is recommended when planning any piping system.

Enlarged diagram and full description of this layout free on request. Ask for Layout No. 78. Jenkins Bros., 100 Park Ave., New York 17.

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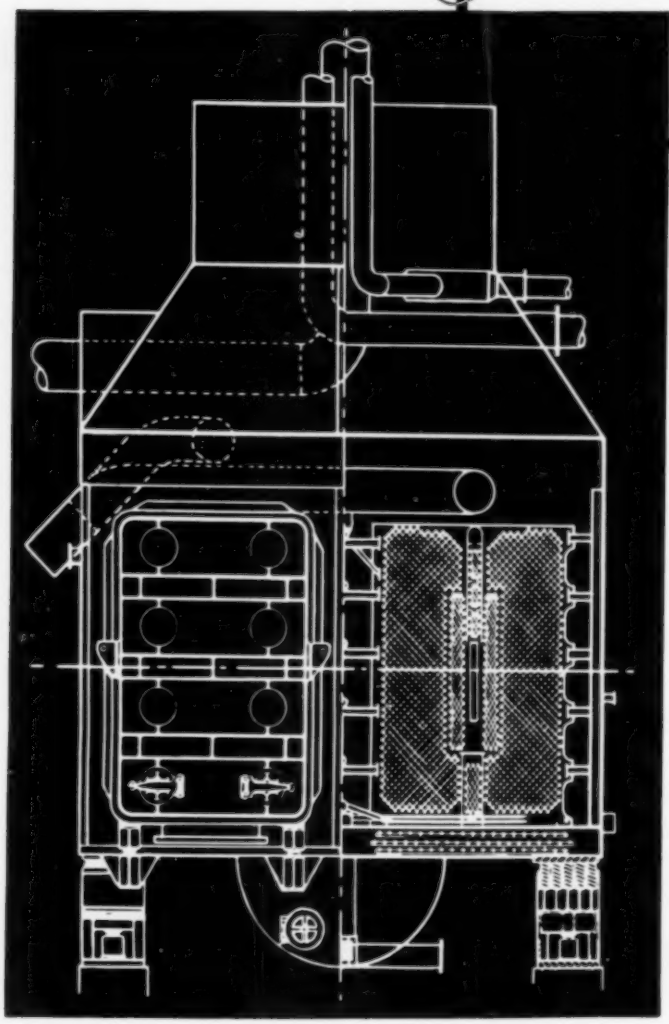

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